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HORMONAL PRODUCTION OF ARTHRITIS

HANS SELYE, M.D., PH.D., D.Sc., F.R.S.(C)
OCTAVIA SYLVESTER, B.Sc.
C. E. HALL, M.Sc.
AND
C. P. LEBLOND, M.D., PH.D.
MONTREAL

Administration of desoxycorticosterone acetate in comparatively high doses causes nephrosclerosis with increased blood pressure and disturbances in electrolyte metabolism, a fact which has been demonstrated in the chick, dog, cat, rat and monkey. Unilateral nephrectomy and a high intake of sodium chloride facilitate the production of these toxic actions of desoxycorticosterone acetate.[1] In addition to the nephrosclerosis, the most striking features of this overdosage are the formation of "Aschoff bodies" in the heart and the presence of periarteritis nodosa,[2] a condition occasionally seen in man following an attack of rheumatic fever. Since in addition choreiform twitches and a few rare cases of arthritis were also encountered in desoxycorticosterone acetate treated animals, it may be said that all the elements of the complex rheumatic syndrome were reproduced in the experimental animal. However, the great frequency of joint manifestations in the spontaneous disease of man and its comparative rarity in the experimentally elicited syndrome remained inexplicable. The main object of this communication is to show that changes in the internal medium of the body may determine the localization of the noxious effects of desoxycorticosterone acetate in the joints. This view is supported by observations showing that the arthritic lesions, which are rarely seen in the intact desoxycorticosterone acetate treated rat, develop with great frequency in similarly treated thyroidectomized or adrenalectomized animals especially if these are kept in cold surroundings. Indeed, under such conditions the joint changes may be evident at a time when none of the other morphologic manifestations of desoxycorticosterone acetate overdosage have as yet become conspicuous.

From the Department of Anatomy, McGill University.
Mr. Hall is working under a grant from the Banting Research Foundation.

The expenses of this investigation were defrayed through a grant received from the Gelatin Products Company of Detroit and Windsor, which also supplied the desoxycorticosterone used in this work.

1. Selye, Hans: Production of Nephrosclerosis by Overdosage with Desoxycorticosterone Acetate, Canad. M. A. J. **47**: 515, 1942. Selye, Hans, and Stone, H.: Role of Sodium Chloride in Production of Nephrosclerosis by Steroids, Proc. Soc. Exper. Biol. & Med. **52**: 190, 1943. Selye, Hans, and Hall, C. E.: Pathologic Changes Induced in Various Species by Overdosage with Desoxycorticosterone, Arch. Path. **36**: 19 (July) 1943; Production of Nephrosclerosis and Cardiac Hypertrophy by Desoxycorticosterone Acetate Overdosage in the Rat, Am. Heart J., to be published. Hall, C. E.: To be published. Selye, Hans; Hall, C. E., and Rowley, E. M.: Malignant Hypertension Produced by Treatment with Desoxycorticosterone Acetate and Sodium Chloride, Canad. M. A. J. **49**: 88, 1943.

2. Selye, Hans, and Pentz, E. I.: Pathogenetic Correlations Between Periarteritis Nodosa, Renal Hypertension and Rheumatic Lesions, Canad. M. A. J. **49**: 264, 1943.

EXPERIMENTAL

Since our previous experiments revealed that unilateral nephrectomy and sodium chloride treatment increase the sensitivity of rats to many overdosage effects of desoxycorticosterone acetate, all animals of the first experimental series were sensitized by ablation of the left kidney five days before injections were started. Instead of ordinary drinking water, all animals were given a 1 per cent aqueous sodium chloride solution beginning on the day of operation. Twenty-eight female albino rats, weighing 40-60 Gm., were used for this experiment. Ten of these were bilaterally adrenalectomized and 10 were thyroidectomized simultaneously with the ablation of one kidney, while the remaining 8 served as controls having intact adrenals and thyroids. All three groups received 2 mg. of finely ground desoxycorticosterone acetate crystals subcutaneously twice daily in an aqueous suspension containing 20 mg. per cubic centimeter. Their food consisted of "purina fox chow," which was complemented in the case of the thyroidectomized animals by the administration of calcium lactate powder ad libitum in order to compensate for possible parathyroid deficiency due to ablation of the internal parathyroids.

Signs of arthritis (figs. 1-3) were first noted on the fourteenth day of desoxycorticosterone acetate treatment, at which time 6 animals in the adrenalectomized group and 2 in the thyroidectomized group exhibited hyperemia and swelling in the tarsal joint region of one or both hind feet. Only occasionally did we note any macroscopically prominent swelling in other joints. The swollen regions were tender to touch. Subsequently the swelling tended to disappear and reappear somewhat irregularly, but with definite predilection for the joints of the hind feet. It should be noted that on the fourteenth day of treatment, when these joint lesions were first observed, 2 animals of the adrenalectomized group and 7 of the thyroidectomized group had succumbed from pneumonia or thyroparathyroid deficiency. In the desoxycorticosterone acetate treated control group of this series only 1 rat showed signs of mild arthritis on the fourteenth day and, while this animal recovered during the subsequent course of the experiment, another showed moderate arthritic manifestations on the twentieth day of treatment. On this day all surviving animals were killed. At autopsy macroscopic signs of nephrosclerosis, periarteritis nodosa or rheumatic nodules in the heart were observable in almost every animal of all three groups, there being no clearcut correlation between the arthritic manifestations and the severity

of the lesions in the internal organs. The knee joint and one entire hind foot from each animal were taken for section. The histologic changes in these tissues will be discussed simultaneously with the corresponding material of our second experiment, which appeared to be essentially the same.

For this series 34 female albino rats, weighing 30-50 Gm., were used. All were sensitized by ablation of the left kidney and were given 1 per cent aqueous sodium chloride solution to drink on the day injections were started. We subdivided them into four experimental groups, one consisting of 10 bilaterally adrenalectomized and the second 10 thyroidectomized animals, with two control groups of 8 desoxycorticosterone acetate treated and 6 nontreated rats. The first mentioned three groups received two daily subcutaneous injections of 3 mg. of finely ground desoxycorticosterone acetate crystals in an aqueous suspension containing 30 mg. per cubic centimeter, while the fourth group received no treatment. Their diet was the same as that of the first experimental series.

The swelling was most evident in the tarsal or ankle joint region and was usually accompanied by hyperemia. Although the total number showing arthritis during the experiment was 4 in group 1, 4 in group 2 and 3 in group 3, it should be emphasized that the severity and duration of the articular lesions was much greater in groups 1 and 2 than in group 3. None of the animals of the nontreated control group ever showed any arthritis. Most deaths during the experiment were due to pneumonia. All surviving animals were killed on the twenty-sixth day. At autopsy macroscopic signs of nephrosclerosis, periarteritis nodosa or rheumatic nodules in the heart were, generally speaking, more pronounced in the adrenalectomized and thyroidectomized than in the intact desoxycorticosterone acetate treated rats and were absent in all noninjected, partially nephrectomized controls.

In view of the fact that both adrenalectomy and thyroidectomy seriously disturb thermoregulation, a group of 6 adult rats treated essentially as those of

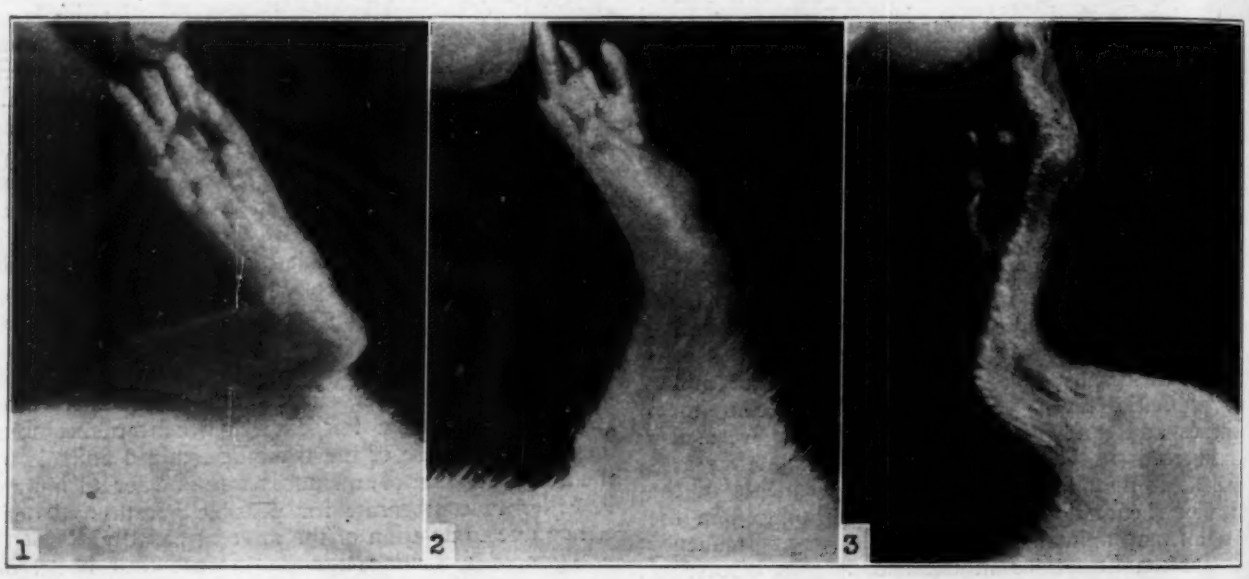

Fig. 1.—Hind foot of a normal control rat.

Fig. 2.—Acute stage of metatarsal arthritis in an adrenalectomized, desoxycorticosterone acetate treated rat of the first experimental series. Note the swelling of the metatarsal and ankle joint regions.

Fig. 3.—Chronic arthritis localized in the distal metatarsal joints in an adrenalectomized, desoxycorticosterone acetate treated rat, in which the hormone was administered for six weeks. (This animal is taken from an earlier experimental series, which is not described in detail in this communication.)

The first signs of arthritis were noted on the tenth day of treatment, after which daily records of the joint condition were made, some of which are given in

Appearance of Arthritis in Adrenalectomized, Thyroidectomized and Desoxycorticosterone Acetate Treated Rats

Day of Treatment	Group 1 Number of Adrenalectomized		Group 2 Number of Thyroidectomized		Group 3 Number of Desoxycorticosterone Acetate Treated	
	Having Arthritis	Surviving	Having Arthritis	Surviving	Having Arthritis	Surviving
10th	2 slight	8	2 slight	7	0	8
18th	2 pronounced	8	3 pronounced	4	0	8
20th	3 pronounced	7	2 pronounced	2	2 pronounced	6
26th	1 moderate	5	1 moderate	1	1 moderate	5

the accompanying table. The arthritic manifestations subsided and recurred in the same joint or subsided in one joint only to reappear in another articulation of the same animal.

group 1 of the preceding experiment for fourteen days, but showing no signs of arthritis, was placed outdoors for twenty-four hours on a cool, windy November day. At the end of this period 3 animals had succumbed and 1 of these, as well as all survivors, had enormous tarsal swellings of the type described.

These observations, as well as the fact that in the two preceding experimental series arthritic changes occurred suddenly in a large number of animals on days when the temperature in the animal room happened to fall below the usual, leads us to assume that temperature changes play an important role in the pathogenesis of the arthritis.

A histologic analysis of the joint lesions—which were essentially identical in all groups—revealed them to be surprisingly similar to those seen in acute cases of rheumatic polyarthritis in man. Comparatively few such cases come to autopsy, but an excellent description of their pathology will be found in a pertinent com-

munication by Fahr.[3] In our experimental material the acute cases show pronounced edema of the periarticular connective tissue and synovial villosities, generally accompanied by hydrarthrosis (figs. 4 and 5). In a somewhat more advanced stage the mesothelial lining of the synovial membranes disintegrates and the underlying tissue undergoes a process of hyalinization and necrosis (fig. 6). At the same time fibrinoid necrosis is also seen in the tendon sheaths and the subcutaneous tissue of the periarticular regions. Around these hyaline fibrinoid deposits a granulation tissue develops which may become very cellular in some cases (fig. 7). It consists of immature large fibroblast-like, slightly basophilic cells containing voluminous vesicular nuclei. The outlines of these cells are irregular and ragged, and most of them contain only one nucleus, although some are polynuclear and resemble "Aschoff cells." While all these changes are very similar to those seen in rheumatic fever, we should also like to record the frequent occurrence of large round eosinophilic cells with a small dense nucleus within the granulomatous area. The exact nature of these cells is still under investigation, but they do not appear to have been seen in man.

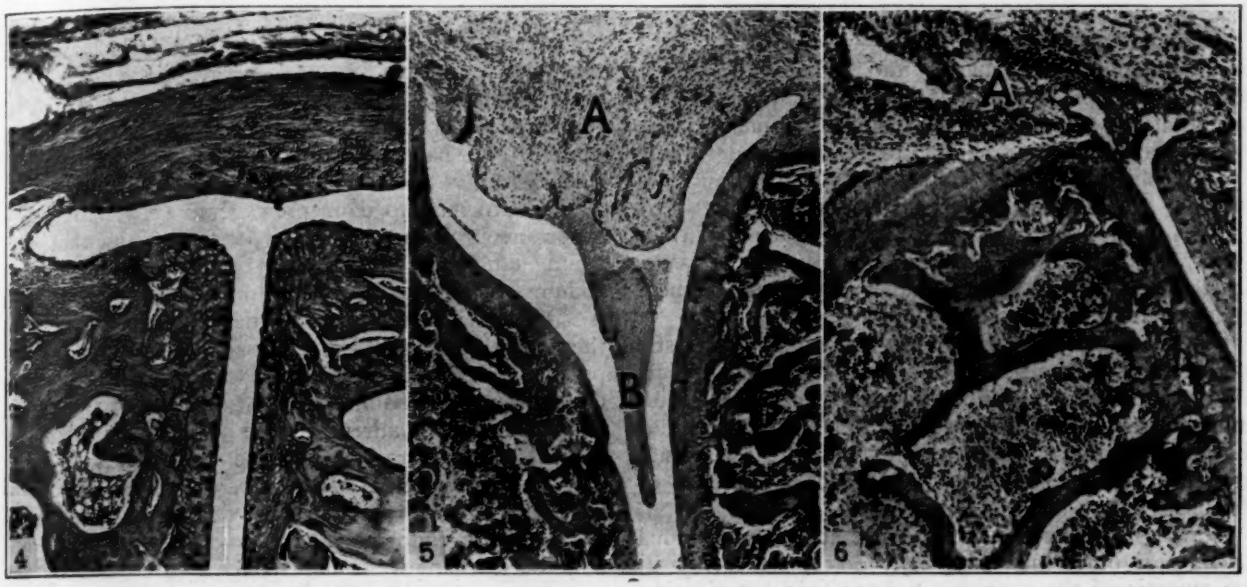

Fig. 4.—This and all subsequent photomicrographs represent sections of the metatarsal region in adrenalectomized desoxycorticosterone acetate treated rats of the first experimental series, described in the present comunication. The section shows the appearance of a normal joint which shows no pathologic change in spite of treatment. Note the thin synovial membrane and the regular appearance of the underlying connective tissue. The joint cavity contains no pathologic constituents.

Fig. 5.—Acute edematous stage of arthritis. Note the swollen edematous synovial villosities (*A*) and the fibrinoid transudate in the joint cavity (*B*).

Fig. 6.—Severe arthritis with hyaline necrosis of the synovial membrane and cellular infiltration of the surrounding connective tissue (*A*).

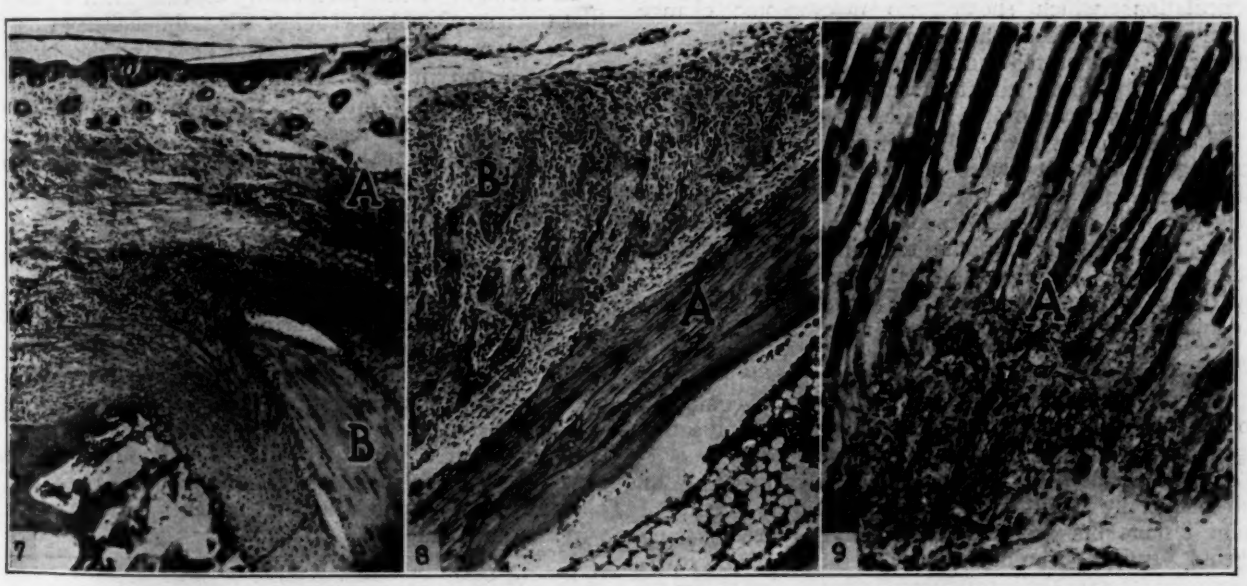

Fig. 7.—Fibrinoid necrosis and cellular granuloma in the derma underneath the epidermis (*A*) in the vicinity of a tendon (*B*).

Fig. 8.—Normal compact metatarsal bone (*A*) and newly formed periosteal bone (*B*) in a comparatively chronic case of arthritis.

Fig. 9.—Normal striated muscle fibers (top) and granulomatous nodule (bottom) from a muscle in the metatarsal region. The muscle fibers at the border of the nodule have undergone degeneration (*A*).

3. Fahr, T.: Beiträge zur Frage der Herz- und Gelenkveränderungen bei Gelenkrheumatismus und Scharlach, Virchows Arch. f. path. Anat. **232**: 134, 1922.

In still more advanced cases the edema subsides almost completely and the granulomatous tissue becomes increasingly dense. Infiltrations are also noted in the sheaths of the nerves in the affected regions. This may perhaps partly explain the painfulness of the lesions. Where hyalinization and granuloma formation occur in the immediate vicinity of the periosteum, new bone formation is stimulated. In such regions it appears that the eosinophilic fibrinoid deposits are gradually transformed into osteoid tissue, while the surrounding immature fibroblasts change into osteoblasts. As a result of this process, rather irregular callus-like bone proliferations arise in the periarticular regions. These changes are strikingly similar to those of the chronic hypertrophic arthritides (fig. 8). The striated muscles between the tarsal bones are frequently infiltrated by nodules of granuloma tissue similar to that seen in the synovial villi and the surrounding connective tissue. In the vicinity of such nodules the muscle fibers undergo degeneration (fig. 9).

Subcutaneous nodules, which are so characteristic of rheumatic joint diseases in man, are not very typical in our experimental animals, mainly because the subcutaneous foci tend to coalesce, thus forming rather diffuse infiltrations which may extend into the derma proper. In some instances these are reminiscent of the proliferative stage of scleroderma.

Although the knee joints did not show any obvious swelling or other macroscopically detectable change in the animals of these groups, microscopic examination revealed massive infiltration of the panniculus adiposus by a granuloma tissue similar to that seen in the vicinity of the arthritic joints of the foot. Other joints have not been examined microscopically but, judged by the lesions in the knee, it is quite possible that several articulations which showed no macroscopic change were similarly affected and sensitized by the treatment in such a manner that additional local damage (draft, cold and the like) might have provoked acute phenomena in their infiltrated tissues.

In conclusion it should be mentioned that the joint cartilages themselves were not visibly affected in any of our animals. This may explain the fact that the arthritis often regresses without leaving any permanent disability. It will be noted that in this as in most other respects the experimental joint lesions elicited by desoxycorticosterone acetate are strikingly similar to those observed in spontaneous rheumatic fever.

COMMENT

Among the various factors which were combined to produce arthritis in these experiments, the causative agent appears to be the corticoid hormone desoxycorticosterone acetate. Exposure to cold, thyroidectomy or adrenalectomy greatly facilitated the production of joint lesions but were effective only as predisposing agents. Indeed, even at room temperature desoxycorticosterone acetate had produced arthritis in a few of the animals that were neither thyroidectomized nor adrenalectomized. Furthermore, the characteristic morphologic lesion of rheumatic fever, the Aschoff nodule, was found in the heart and elsewhere after very long desoxycorticosterone acetate treatment even in the absence of organ extirpation or salt administration.[4]

The clinical and histologic similarity of the arthritis observed in our animals with that seen in the acute rheumatic fever of man suggests that the human disease may be a clinical manifestation of adrenal cortex hyperactivity. It has often been emphasized that rheumatic fever, as well as nephrosclerosis and hypertension, tend to develop following exposure to a variety of rather nonspecific damaging agents such as exposure to cold, emotional shock and infectious diseases. On the other hand, these same agents are known to cause adrenal enlargement with histologic signs of increased cortical hormone production, a phenomenon characteristic of the "alarm reaction."[5] It has even been found that immediately after exposure to various types of stress the corticoid hormone content of the urine rises above normal.[6] It has also been demonstrated in rats that concomitantly with the adrenal cortex hypertrophy similar exposure to damaging agents (especially cold) causes nephrosclerosis with hypertension and that here again unilateral nephrectomy and treatment with sodium chloride exert a sensitizing effect.[7] Although it is too early as yet to give a definite interpretation to these observations, it may be said that they are compatible with the assumption that exposure to various damaging agents stimulates the production of corticoid hormones by the adrenal cortex. This is probably a defense mechanism, since these compounds increase resistance in general. However, under certain conditions this defense reaction may defeat its purpose, as the resulting endogenous overproduction of corticoids may elicit changes similar to those produced by the exogenous administration of desoxycorticosterone acetate. Evidently this endogenous corticoid overdosage would be most detrimental to patients who are sensitized to the toxic actions of cortical hormones by renal disease or a habitually high intake of sodium chloride.

In the light of this preliminary discussion, it appears that the role of cold, thyroid or adrenal deficiency would be to favor a localization of the desoxycorticosterone acetate action in and around joints. It is not clear as yet why the joints and the periarticular tissues should become more readily affected by desoxycorticosterone acetate in the absence of either the adrenals or the thyroid, but the detrimental effect of these gland deficiencies on thermoregulation may be involved. At any rate, the present observations show that complex interrelations exist between the endocrine glands and the joints and that the adrenal and thyroid exert a demonstrable effect on the articulations.

In view of the great frequency and social significance of arthritic lesions in man,[8] it appears desirable to correlate our experimental findings with those recorded in clinical papers. The most striking fact which emerged from a perusal of the voluminous literature on arthritis was that, in spite of the countless recorded observations of joint lesions in patients suffering from various endocrine diseases, no investigator presented

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5. Selye, Hans: The Alarm Reaction, in Piersol, G. M.: Cyclopedia of Medicine, Philadelphia, F. A. Davis Company, 1940, vol. 15, p. 15. Leblond, C. P.: Le syndrome non-spécifique (réaction d'alarme de Selye), Ann. d'endocrinol. **1**: 179, 1939.

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7. Selye, Hans: On the Production of Malignant Hypertension by Chronic Exposure to Various Damaging Agents, Rev. canad. de biol., to be published.

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a unified concept of their pathogenesis. In the absence of any systematic review of the relevant literature, we should like to summarize the data on "endocrine arthritis" in order to expedite further clinical investigations in this field. The rheumatic and rheumatoid joint lesions will be considered together, and we shall not try to differentiate sharply between the various types of chronic arthritis (hypertrophic, atrophic, and so on). As suggested by some of our results (compare figures 2 and 3), it appears quite possible that, depending on the acuteness or chronicity of the condition or other incidental factors, the same etiologic agent may manifest itself in different ways and give rise to different types of arthritis. However, the purulent arthritides with demonstrable microbial contamination of the joint cavities will not be considered here, as they are obviously not of endocrine origin.

For the evaluation of our experimental results, special interest is attached to those clinical observations which tend to correlate arthritis with thyroid or adrenal deficiency. Hypothyroidism appears to influence the joints in a rather specific manner. Since Kocher [9] developed his concept of "rheumatismus thyreoprivus chronicus," the frequency of rheumatic and especially rheumatoid conditions in frank myxedema and latent hypothyroid conditions has been established by numerous observations.[10] In those cases in which arthritis appears in combination with signs of thyroid deficiency and a decreased basal metabolic rate, thyroid medication often proved of great value.[11]

Although clinical observations also reveal the possibility of producing arthritis with thyroid hormone [12] we have been unable to do so in animal experiments up to the present. However, it is perhaps pertinent to mention that thyroxin overdosage is effective in causing nephrosclerosis and hypertension especially in the unilaterally nephrectomized sodium chloride treated rats and in this respect resembles desoxycorticosterone acetate overdosage.[13]

A deficiency of the adrenal gland has not been seriously considered by clinicians as playing a role in the production of arthritis, although in Addison's disease [14] and in status thymicolymphaticus [15] arthritis has been recorded.

Surprisingly, joint lesions have also frequently been reported in cases of either thyroid or adrenal hyperactivity. Thus frank toxic diffuse goiter is often accompanied by acute or chronic arthritis and in such cases thyroidectomy or x-ray treatment of the thyroid region proved beneficial.[16] Similarly chronic arthritides are frequent complications of Cushing's disease in which the adrenal cortex is usually hyperplastic or adenomatous.[17] In conclusion, the most prominent fact about the clinical syndrome of endocrine arthritis is that both hyperfunction and hypofunction of several endocrine glands may elicit joint manifestations.

Among the joint lesions which do not appear to be directly related to the thyroid or adrenals, the chronic arthritides, periarthritides and arthralgias of the menopause received particular attention because of their great frequency and practical importance.[18] According to Charcot [19] 8 to 10 per cent of women between 40 and 60 years of age suffer from arthritis as against 1 to 2 per cent of old men. Among 1,000 menopausal women investigated by the Council of the Medical Women's Federation [20] 23.7 per cent exhibited evidence of "arthritis and fibrositis." The British Ministry of Health points out that between the ages of 37 and 54

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years five times as many women as men suffer from arthritis.[1] Thus—although the figures given by the different observers vary—the prevalence of arthritis among women of menopausal age is definitely established. Joint lesions may also appear during the artificial menopause elicited by x-ray castration and—perhaps somewhat less frequently—following ovariectomy.[21] An arthritis presumably due to eunuchoidism in women has been reported by Lieschied and Sellheim [22] and by Muñoz Areños.[23] An intermittent type of hydrarthrosis, "hydrops articulorum intermittens," has been described by Schlesinger;[24] in many of these cases the fluid accumulation in the joint cavity coincides with the menstrual bleeding.[25] Other types of joint swellings may also be related to the sexual cycle.[26] In all these cases of "menstrual arthritis" it is stated that the joint manifestations disappear during pregnancy and are not seen before puberty. In fact Hench [27] states that even ordinary rheumatoid arthritis is favorably influenced by gestation. The beneficial effect of various natural and artificial folliculoid preparations is particularly obvious in cases of menopausal arthritides and arthralgias.[28] Folliculoids have likewise been shown to be of use in Schlesinger's "hydrops articulorum intermittens," [29] in chronic rheumatoid arthritis [30] and in other less well defined types of chronic arthritides.[31] In relation to the present work the most interesting feature of "menopausal rheumatism" is that according to some clinicians it develops most readily in hypothyroid women [32] and that it is often beneficially influenced by thyroid hormone therapy.[33]

The hypophysis, which regulates the function of the thyroid and adrenals, is probably also involved in the pathogenesis of endocrine arthritis, although it is difficult as yet to formulate its etiologic role. The hypertrophic osteoarthritis of acromegaly, which usually has a predilection for joints of the spinal column, is so well known as hardly to need much comment.[34] Hypopituitary dwarfism has also been claimed to act as a predisposing factor for the development of arthritis.[35] Malfunctions of the posterior lobe of the pituitary, such as are found in diabetes insipidus [36] or adiposogenital dystrophy,[37] facilitate the production of joint lesions.

There are also a number of reports on rather complex and vague relations of rheumatism to endocrine glands; thus several investigators considered the possibility of an "endocrine arthritis" mainly on the basis of the frequent coincidence of chronic joint lesions with various, often ill defined, endocrinopathies.[38] Others envisaged the possibility of an "endocrine rheumatism," including in that term different manifestations of acute rheumatic fever and rheumatoid arthritis which may have been elicited by hormonal imbalance.[39]

Finally, we should like to mention in connection with the arthritis eliciting effect of cold in our experiments

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that Lauber and Ramm [40] claimed arthritides are especially common in women who do cleaning work which makes it necessary to spend a good deal of time with their hands in cold water. Additional reports of this type are commonly found in the literature.

This brief survey of the clinical literature reveals manifold correlations between endocrine malfunctions and joint lesions and makes it obvious that in human pathologic conditions, as in our animal experiments, hormonal factors can act either as causative or as predisposing agents in the production of joint lesions.

SUMMARY

Experiments in the rat indicate that under certain experimental conditions overdosage with desoxycorticosterone acetate elicits a polyarthritis which histologically resembles that seen in acute rheumatic fever. These joint lesions are frequently accompanied by the appearance of Aschoff bodies in the heart and sometimes also by periarteritis nodosa.

Joint lesions are more readily produced by desoxycorticosterone acetate in adrenalectomized or thyroidectomized than in intact rats, especially if they are exposed to cold.

The great similarity between the experimental lesions elicited by desoxycorticosterone acetate and the manifestations of rheumatic fever are interpreted as indicating that the adrenal cortex may play an important role in the pathogenesis of rheumatic and rheumatoid conditions in man.

ORAL SODIUM LACTATE IN THE TREATMENT OF BURN SHOCK

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The shock syndrome which follows severe burns is accompanied by hemoconcentration and diminished plasma volume.[1] Early efforts to combat the shock symptoms by intravenous administration of electrolyte solution or dextrose or both were disappointing. Therapeutic emphasis then shifted to the use of serum or plasma because it was expected that these protein containing fluids would remain longer in circulation and thus would have more time to reduce the hemoconcentration and to restore the diminished plasma volume. Concentrated human albumin [2] has also been used to accomplish these objectives by the additional mechanism of drawing fluid into the circulation.

Actually, however, the problem is far more complicated. Recent accounts of two catastrophes involving many burn cases, the Japanese attack at Pearl Harbor [3] and the Cocoanut Grove fire in Boston,[4] have indicated the relatively high mortality from severe burns even when large amounts of plasma are used. The English experience with serum or plasma also revealed a high mortality from burn shock.[5]

The recent experimental work of Elman [6] suggests that intravenous administration of plasma does not invariably correct the hemoconcentration following severe burns. The careful studies of Scudder and Elliott [7] in 1 case showed that, "in spite of 2,000 cc. of serum, 500 units of adrenal cortical extract, and 2,500 cc. of normal salt solution with 50 grams of glucose . . . the hematocrit, instead of decreasing, increased to 73 per cent." Rhoads, Wolff and Lee [8] also found that, "when large plasma transfusions were administered soon after the receipt of the burn, there was not as great a rise in the plasma volume as had been

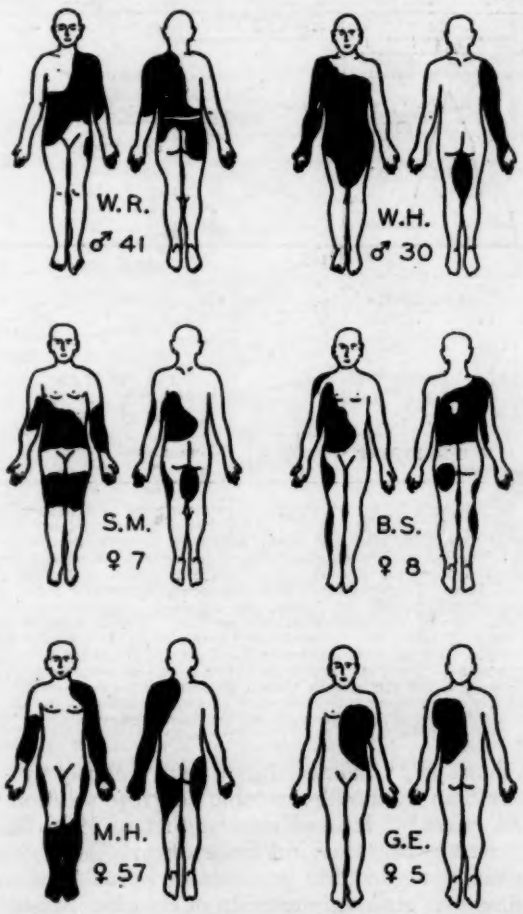

Fig. 1.—Extensive full thickness burns treated with oral sodium lactate. The blackened areas represent the actual areas of full thickness third degree burns that were skin grafted. The initials refer to the cases in table 1. The less extensive cases are not included in this illustration.

40. Lauber, H. J., and Ramm, C.: Prognose und Therapie der Arthropathia ovaripriva, München. med. Wchnschr. **77**: 89, 1930.

From the Department of Bacteriology, Columbia University College of Physicians and Surgeons and the Surgical Service of Harlem Hospital.

Owing to lack of space, tables 2 and 3 are omitted from THE JOURNAL and table 1 has been abbreviated. The complete article appears in the author's reprints.

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For the purpose of this investigation the author was appointed research fellow in Harlem Hospital, in the wards of which he was given permission by Dr. Louis T. Wright, director, and Dr. Ralph Young, visiting surgeon, to conduct these investigations. The Littauer Pneumonia Research Laboratory under Dr. Jesse G. M. Bullowa cooperated. Miss M. H. McKenna, chemist to the Harlem Hospital, gave invaluable assistance.

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2. Heyl, J. T., and Janeway, C. A.: Use of Human Albumin in Military Medicine, U. S. Nav. M. Bull. **40**: 785 (Oct.) 1942.

3. Hayden, Reynolds: Activities of the Naval Hospital at Pearl Harbor Following the Japanese Air Raid of December 7, 1941: Comments on the Care of Battle Casualties, Am. J. Surg. **60**: 161 (May) 1943.

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5. Symposium on Treatment of Burns, Lancet **2**: 621 (Nov. 16) 1940.

6. Elman, Robert, and Brown, F. L.: Experimental Burns: I. Methods, Mortality and Hemoconcentration Curves, War Med. **3**: 477 (May) 1943.

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8. Rhoads, J. E.; Wolff, W. A., and Lee, W. E.: The Use of Adrenal Cortical Extract in the Treatment of Traumatic Shock of Burns, Ann. Surg. **113**: 955 (June) 1941.

anticipated and, furthermore, as a rule the rise that was obtained proved to be only temporary."

On the other hand, Rosenthal's experimental studies [9] suggest that electrolyte solutions deserve reconsideration. In an extensive series of well controlled experiments in mice, Rosenthal recently found that in acute burn shock "mouse serum intravenously was slightly less active than equivalent volumes of 0.9 per cent NaCl orally. Little effect was observed from the intravenous administration of a hypertonic solution of human serum albumin. . . . it is possible to correlate the degree of effect of this preparation and of mouse serum with the sodium contained in the doses administered. . . . It was demonstrated that serum was slightly more effective when given orally than

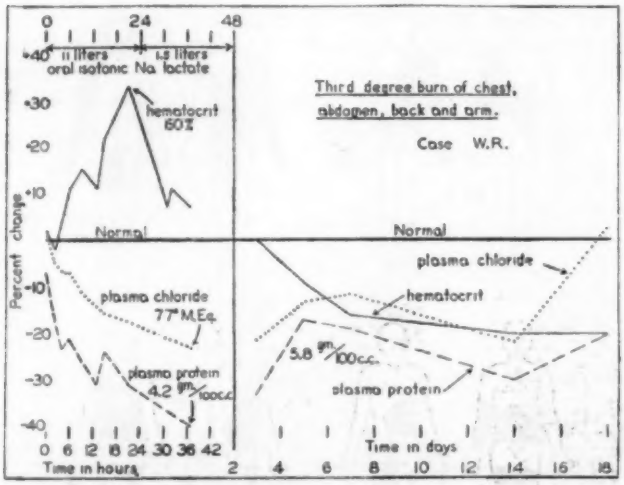

Fig. 2.—Changes in the blood after treatment with oral sodium lactate in patient W. R. with extensive full thickness burns (weight 64 Kg.). Horizontal axis, time after the burn: hours up to forty-eight, then time in days. Vertical axis, percentage change in hematocrit, plasma proteins and chlorides from the normal range, which is indicated by the center horizontal line. This "normal" line represents hematocrit value of 45 per cent, plasma protein of 7 Gm. per hundred cubic centimeters and plasma chlorides of 103 milliequivalents per liter. The amount of sodium lactate solution administered is shown in the upper left border of the chart. Solid line, hematocrit; dotted line, plasma chloride; broken line, plasma proteins. The chart shows the progressive rise in hematocrit after the severe burn, the decrease in plasma proteins with subsequent increase on the fifth day without administration of any plasma and the decrease in plasma chlorides, which remained low for fourteen days.

intravenously." [9a] Saline solution intravenously was less effective than by mouth; isotonic dextrose solution was without effect.[10] It is of interest that in 1926 Davidson [11] wrote of "the indefinite term 'shock'" and "the equally vague term 'toxemia of burns'" when he described the "striking alteration of chloride metabolism in cutaneous burns." On the basis of his observations that the plasma chlorides of such patients were low and the urine almost devoid of sodium chloride for as long as three weeks after the burn, in spite of adequate salt intake, he advised the administration of sodium chloride in severe burns instead of dextrose solutions.[12] In extensive burns he administered as much as 10,000 cc. of isotonic saline solution in twenty-four hours by three routes: subcutaneous, intravenous and rectal.[13]

Since extensive third degree burns were being studied to evaluate a new local therapy,[14] it was decided on the basis of these facts to try treating burn shock with oral sodium lactate [15] instead of plasma. The results with this simplified therapy have proved so successful that this preliminary report is presented.

PROCEDURE

The procedure used in this study is briefly as follows: Morphine sulfate ¼ grain (0.016 Gm.) by hypodermic injection was administered on admission for severe pain (less to children). Blood was taken at once for immediate and subsequent analyses. The patient was placed on and covered with a sterile sheet, but no blankets nor heat were applied.[16] Large amounts of the chilled isotonic (one sixth molar) 1.75 per cent sodium lactate solution were given by mouth at once and at fifteen minute intervals thereafter on schedule. This solution was prepared by emptying a bottle previously filled with 72 Gm. of sodium lactate syrup into a 4 liter bottle, which was then filled with cold tap water. Sodium lactate syrup varies in composition, frequently containing but 60 to 65 per cent of sodium lactate, in which case 110 Gm. is used. Storage of large quantities of the isotonic solution, which may become sour, was thereby avoided. The burns were rapidly freed of any loose tissue, covered with the local application [17] and bandaged. Blood pressures and repeated samples of blood were taken at frequent intervals during the first twenty-four hours. A careful record of fluid intake is imperative, and an exact schedule is used so that approximately 7 to 10 liters (from 10 to 15 per cent of body weight) of the isotonic sodium lactate are administered within the first twenty-four hours. Any vomiting (which frequently occurs in severe burns [1]) was treated by administration of more fluid. Frequently a small Levine tube was passed through the nose and connected with a drip apparatus, so that the sodium lactate was administered constantly. The urinary output was carefully watched and all urine collected. Fluid administration in the subsequent days was adjusted to obtain 1 to 2 liters of urine daily. When food was tolerated, a high protein diet was given supplemented in extensively burned patients by 50 to 100 Gm. daily of amino acids.[18]

9. Rosenthal, S. M.: Chemotherapy of Burns and Shock: III. Effects of Systemic Therapy on Early Mortality, Pub. Health Rep. **58:** 513 (March 26) 1943; footnote 9a.

9a. Rosenthal, S. M.: Experimental Chemotherapy of Burns and Shock: IV. Production of Traumatic Shock in Mice; V. Therapy with Serum and Sodium Salts, Pub. Health Rep. **58:** 1429 (Sept. 14) 1943.

10. Desoxycorticosterone, adrenal cortex extract, epinephrine or posterior pituitary injection subcutaneously were also without benefit.

11. Davidson, E. C.: Prevention of Toxemia of Burns: Treatment by Tannic Acid, Am. J. Surg. **40:** 114-116 (May) 1926.

12. Davidson, E. C.: Sodium Chloride Metabolism in Cutaneous Burns and Its Possible Significance for a Rational Therapy, Arch. Surg. **13:** 262 (Aug.) 1926.

13. Davidson, E. C.: Tannic Acid in the Treatment of Burns, Surg., Gynec. & Obst. **41:** 202 (Aug.) 1925.

14. Fox, C. L., Jr.: Neutralized Tannate and Ionized Sulfonamide for the Local Treatment of Burns, to be published. The following preliminary reports are available:
Hayden, Reynolds: Use of Sulfonamides, J. M. Soc., County New York, July 21, 1942, vol. 1.
Hayden.[5]
Bullowa, J. G. M., and Fox, C. L., Jr.: Newer Conceptions of the Treatment of Burns, Hebrew M. J. **1:** 192, 1943.

15. Sodium lactate was selected in the beginning because in Rosenthal's [9] experiments it appeared slightly superior to other sodium salts. Although this superiority may be negligible, we have continued to use lactate because it is well taken by adults, does not seem to provoke vomiting and yields the satisfactory results referred to in this paper. It also helped to counteract the acidosis and to induce formation of an alkaline urine, thereby avoiding renal precipitation of sulfonamides (Fox, C. L., Jr.; Jensen, O. J., and Mudge, G. H.: The Prevention of Renal Obstruction During Sulfadiazine Therapy, J. A. M. A. **121:** 1147 [April 3] 1943). The extent of conversion of lactate to bicarbonate is yet uncertain, but no chemical nor clinical evidence of alkalosis was noted in our cases. A more physiologic solution would contain sodium chloride. Such solutions are under study at the present time.

16. Rosenthal, S. M.: Effects of Local Therapy on Mortality from Shock, Pub. Health Rep. **57:** 1923 (Dec. 18) 1942. Environmental Temperature and Mortality in Burns, editorial, J. A. M. A. **121:** 1353 (April 24) 1943.

17. The local treatment of these patients consisted in the application of neutralized (p_H 7.6) tannate-sulfadiazine ointment,[14] which was covered with a layer of sterile old linen, then overlaid with gauze pads and bandaged snugly but not tightly, i. e. a "pressure" bandage was not used. This ointment contains 5 per cent of tannic acid as neutral tannate and 3 per cent of sulfadiazine or sulfathiazole as soluble salts, both made by addition of sufficient alkali to raise the p_H to 7.6. This mixture is then added to a water soluble stearate base with a continuous aqueous phase. The W. R. Warner Company compounded this ointment for us.

18. The oral amino acids (Oramin) were generously provided by the William R. Warner Company, New York. Although some of these patients were in bed for four months and underwent up to eight skin grafting operations, their plasma proteins were maintained with only occasional preoperative transfusions; no malnutrition edema was encountered.

Blood samples were analyzed by "hematocrit" for relative cell volume and the plasma for total protein, albumin : globulin ratio, chlorides, carbon dioxide combining power, sodium, cephalin flocculation capacity, amylase, icterus index, direct and indirect bilirubin, sugar and urea. The urine was analyzed for sodium, chlorides, sulfonamide, tannates, creatinine and creatine.

RESULTS

All cases of thermal burns admitted to Harlem Hospital since Feb. 1, 1943 and 1 case of severe burns admitted to the Babies Hospital have been treated according to this procedure. There was no selection of cases; 12 additional cases of partial thickness (second degree) burns are omitted from this report. Certain data relating to the patients with full thickness (third degree) burns who have been treated are summarized in table 1. Figure 1 indicates the location of the third degree, full thickness burns and the areas that were skin grafted [19] in certain cases. The following typical cases illustrate the course of events:

W. R., a man aged 43, was admitted to Harlem Hospital at 1:35 a. m. just after having been burned by fire while asleep. The chest, anterior abdominal wall, left side, entire back, left axilla and left arm and right buttock presented the hard, brawny edema with lifeless skin characteristic of third degree burns and constituted 35 per cent of the body surface (W. R. in figure 1). All these areas required skin grafting. The neck, left forearm and hand and left buttock were blistered and showed deep second degree burns. These areas healed without grafting. Relevant data are summarized in figures 2 and 3. Blood pressure, 70 systolic, 50 diastolic on admission, remained low for eight hours, then increased to normal range.[20]

B. S., a girl aged 8 years, was admitted to the Babies Hospital at 9 p. m. just after having set fire to her clothing while playing with matches. The right side of her chest, both upper arms, the right axilla, the back from the neck to the buttocks and involving the right buttock, the right thigh and part of the right leg were burned. There were few blisters; the full thickness (third degree burn) appeared to involve approximately 22 per cent of the body surface. The relevant data of this case are summarized in figures 4 and 5.[20]

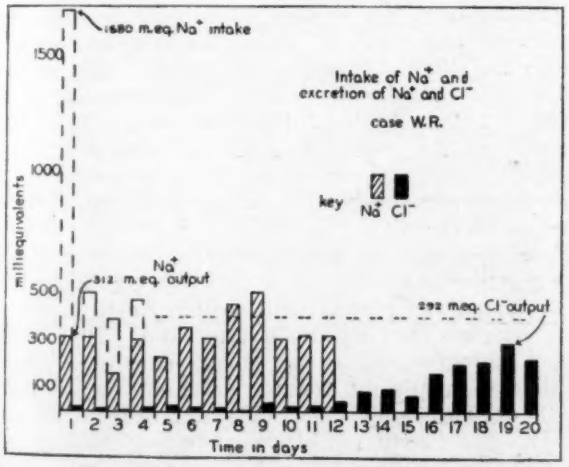

Fig. 3.—Sodium and chloride balance in aforementioned case. Horizontal axis, time after the burn; vertical axis, quantity of sodium or chloride in milliequivalents. The sodium intake in the form of lactate is shown by the area in the box with interrupted lines. The sodium excretion is much less than the intake. The deficit on the fourth day exceeds 1,000 milliequivalents of sodium; note the increased excretion of sodium (after therapy had ceased) on the eighth and ninth days. The chloride excretion is seen to be much less than the intake of sodium chloride (indicated by the interrupted horizontal line) until after the sixteenth day, when the output approaches normal.

These results illustrate the rising hematocrit reaching the peak of 58 to 60 per cent from four to approximately twenty hours after the burn, and the steady decline in chloride [21] and proteins. The "shock" blood pressure approached normal while the hematocrit was still high; the "hemoconcentration" was actually a decrease in the concentration of plasma proteins and chlorides accompanied by increased relative erythrocyte volume. There was comparatively little surface oozing although the brawny edema was prominent and extensive. (It is not yet possible to assess the relative benefit of this systemic therapy and the neutralized [p_H 7.6] tannate-ionized sulfadiazine ointment in preventing loss of fluid from the surface. The local treatment of patient B. S. was a sulfathiazole emulsion; the oozing was much less than had previously been noted in similar cases treated with plasma.) It is significant that the right hand and arm of W. R. and the left thigh and leg of B. S.—not burned—at no time showed any edema despite the ingestion of large volumes of isotonic fluid and the transient low plasma protein concentrations of 4.2 Gm. per hundred cubic centimeters. It is of further interest that these low levels on the second day steadily increased to the normal range without administration of any plasma.

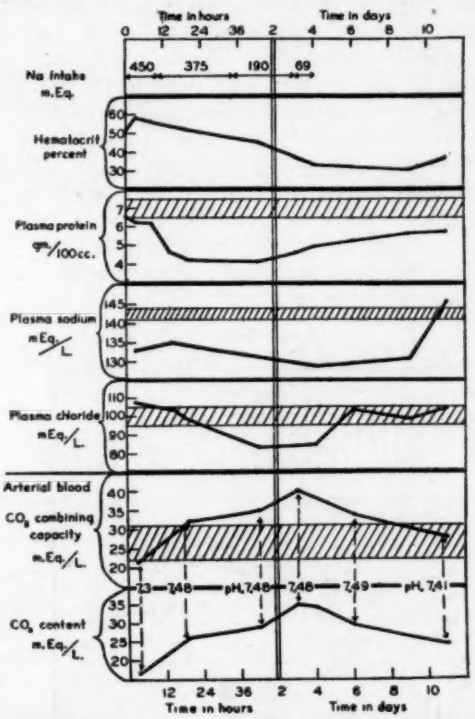

Fig. 4.—Changes in severe burn case treated with oral sodium lactate (B. S.) (weight, 26 Kg.). The areas with sloping lines indicate the average normal range. The amount of sodium retained is shown at intervals at the top of the chart (amount vomited was subtracted). The plasma protein concentration dropped but subsequently increased without administration of plasma. The p_H was computed from the carbon dioxide measurements on arterial blood by using the Henderson-Hasselbalch equation $p_H = 6.1 + \log \frac{HCO_3^-}{H_2CO_3}$. The values for carbon dioxide content were obtained on whole arterial blood for experimental reasons [20] and are not directly relevant in this study. The carbon dioxide combining capacity was computed by alinement charts and is graphed with the normal range indicated by the shaded area. There was an initial uncompensated acidosis corrected by sodium lactate therapy. The slight alkalosis that followed was of the compensated type. The plasma sodium was low on admission (133 milliequivalents per liter) and decreased to 129 milliequivalents per liter on the third day. On the fifth and ninth days the plasma sodium was 130 milliequivalents per liter and on the eleventh day it was normal at 145 milliequivalents per liter.

19. Fox, C. L., Jr., and Tamerin, J. A.: The Use of Soluble Sulfonamides in Extensive Third Degree Burns, Bull. New York Acad. Med. **19**: 669 (Sept.) 1943.

20. The data are also tabulated in the author's reprints.

21. The decline in chloride undoubtedly was due at least in part to the large amount of lactate given. Sodium determinations in case B. S. and other cases have shown that there is also a pronounced fall in the sodium concentration of the plasma despite the large amount of sodium administered.

In general, the large volumes of fluid were well tolerated; the patients wanted water to drink but after a short time became accustomed to the lactate and drank copiously of their own volition. Occasionally, frequent vomiting occurred and was treated by passing a Levine tube and administering the lactate by steady drip. When the initial vomiting persisted, intravenous infusion was used temporarily to support the circulation until the stomach became adjusted to receiving the steady flow of sodium lactate. (For the temporary infusion in emergencies, sterile saline solution may be used if sterile one-sixth molar sodium lactate is not immediately available.) It is possible that a smaller volume of isotonic fluid is actually necessary, but in the present state of knowledge, until urine secretion begins, it is difficult to gage the amount to give. Since Rosenthal [9] found hypertonic solutions less effective than isotonic, capsules of salt followed by water were not used.

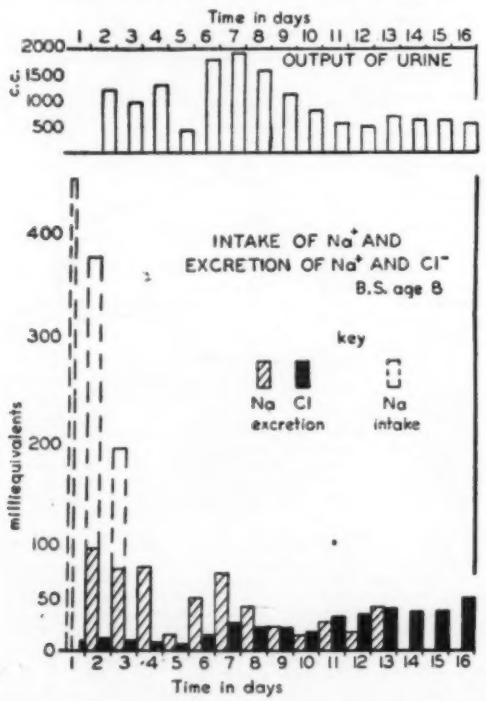

Fig. 5.—The intake of soduim ion is shown by the height of the interrupted lines (the width on the first day is narrowed to indicate the shorter time interval from admission at 9 p. m. to 7 a. m.). At the end of the fourth day the sodium intake exceeded the sodium output by over 800 milliequivalents. The chloride excretion, which approached normal by the sixteenth day, was far below the average daily intake of 100 milliequivalents. The brief duration of oliguria is shown. The diuresis on the sixth to eighth days coincided with the disappearance of edema in the burned regions.

It is also worthy of note that in these cases copious urinary output occurred from six to twelve hours after therapy was begun. Albuminuria did not occur. Furthermore, the nonprotein nitrogen values in the blood did not become elevated. This is in pronounced contrast to the oliguria, albuminuria and azotemia characteristic of burns treated by other methods.[1]

COMMENT

Owing to the fact that from one to eight skin grafting operations [22] were required in these cases, the extent of full thickness burns could be definitely ascertained. The results in these severe burns constitute prima facie evidence of the therapeutic efficacy of large amounts of oral sodium lactate instead of intravenous plasma.

The biochemical changes involved have only begun to be studied. In a preliminary abstract, Wilson and his collaborators [23] noted that the sodium in the blood plasma in the veins leaving burned areas was lower than the sodium concentration of the inflowing blood plasma. Scudder has emphasized the need for large doses of sodium chloride to combat the rise in the plasma potassium concentration which he noted occurred early in burns.[24] Harkins [1] reproduced data from Wilson's clinical papers which show definite reduction in blood chlorides but withheld comment. Rosenthal's experiments [9] bring the significance of disturbance in sodium/potassium balance into sharp focus, and the present clinical data give some indication of the magnitude of the disturbance.

As seen in figures 3 and 5, despite copious urinary output the huge quantity of sodium and fluid administered was not promptly excreted but was retained in the body and gradually appeared in the urine over a ten to twenty day interval. In other words, there was distributed within these patients a volume of fluid isotonic with respect to sodium which represented approximately three fourths or more of their normal volume of extracellular fluid (plasma plus interstitial fluid).[25] Similar findings were noted in the other cases of extensive burns.

In addition, Davidson's observations on the disappearance of the chlorides from the urine [12] were strikingly confirmed. It is for this reason that 1 case of second degree burns is cited (last case, table 1), because there too the plasma chlorides dropped significantly and the urinary chlorides fell to zero and remained depressed for ten days after the burn.

Further studies of the redistribution of sodium are in progress. It is, however, pertinent to mention here that experiments on the distribution of radioactive sodium administered to shocked animals revealed that enormous quantities of sodium entered the injured muscle and skin.[26] Normally skin contains little sodium, and muscle considerably less.[27] The depletion of the blood of sodium by the injured tissues has been suggested [26] as the chief cause of the "deficit in blood volume" recently described as "the anatomical factor immediately responsible for circulatory failure" in all types of shock.[28]

Extension of these studies may answer the important question as to whether a judicious combination of small amounts of plasma with sodium lactate might be more effective than sodium lactate alone. Plasma can supply protein as well as salt, but the amount of plasma required to supply the necessary sodium would exceed 10,000 cc., an amount not readily administered intravenously. The function of plasma is twofold: to augment the effective circulating blood volume and to increase the concentration, and hence the osmotic pressure, of

22. The numerous skin grafting operations in these cases were carried out by Dr. Joseph A. Tamerin, with the assistance of Dr. Samuel C. McKinney and Dr. Arthur Garnes, by a technic described elsewhere (Whipple, G. H.: Basic Principles in the Treatment of Thermal Burns, Ann. Surg. **118**: 187 [Aug.] 1943; discussion, p. 192. Fox and Tamerin.[10]).

23. Lowdon, A.; McKail, R.; Rae, S.; Stewart, C., and Wilson, W. G.: Changes in Sodium and Other Constituents of Blood and Extracellular Fluids Following Scalds, J. Physiol. **96**: 27, 1939.

24. Scudder, J.: Blood Studies as a Guide to Therapy, Philadelphia, J. B. Lippincott Company, 1940.

25. Gamble, J. L.: Chemical Anatomy, Physiology and Pathology of Extracellular Fluid: A Lecture Syllabus, Boston, Spaulding-Moss Company, 1942.

26. Fox, C. L., Jr., and Keston, A. S.: The Electrolyte and Water Changes in Shock Traced by Radioactive Sodium, to be published.

27. Hastings, A. B., and Eichelberger, L.: The Exchange of Salt and Water Between Muscle and Blood, J. Biol. Chem. **117**: 73, 1937. Harrison, H. E.; Darrow, D. C., and Yannet, H.: The Total Electrolyte Content of Animals and Its Probable Relation to the Distribution of Body Water, ibid. **113**: 515, 1936.

28. Cournand, A.; Riley, R. L.; Bradley, S. E.; Breed, E. S.; Noble, R. P.; Lauson, H. D.; Gregersen, M. I., and Richards, D. W.: Studies of the Circulation in Clinical Shock, Surgery **13**: 964 (June) 1943.

plasma proteins. How permanently therapy with large amounts of plasma alone accomplishes these ends needs further study; this need is suggested by the previously mentioned observations of Scudder and Elliott,[7] of Rhoads, Wolff and Lee[8] and of Elman[6] together with the recent experiments of Fine, Seligman and Frank[29] using radioactive plasma. It appears plausible from our results that by greatly increasing the volume of interstitial fluid the diminished plasma volumes in shock can be restored. For example in case B. S. the low initial plasma volume of 720 cc. was raised to the normal range (1,170 cc.) by this therapy without plasma. In addition, more accurate evaluation of the actual loss or withdrawal of plasma proteins from the

Whatever may be the ultimate conclusion about the added benefit of small amounts of plasma, the fact that extensively and severely burned patients survived and recovered after the oral administration of isotonic sodium lactate instead of the intravenous injection of plasma proves that correction of the sodium imbalance is of major importance. W. H. and S. M. were the first patients treated. As experience had not yet justified full confidence in the method, each received 200 cc. of plasma. There is no reason to believe that this small amount of plasma contributed to the favorable outcome. No plasma was used in any of the other cases.

The simplification in the care of such patients is worth noting. Intravenous therapy is dispensed with

TABLE 1.—*Summary of Third Degree Burns* Treated Initially with Oral Sodium Lactate Instead of Plasma*

Case, Sex, Age	Area Third Degree Burn; Percentage by Berkav Scale	Laboratory Data	First Skin Graft (Days After Burn)
W. R. ♂ 40	Chest, abdomen, entire left side, left arm including axilla, back, right flank, both buttocks; 36%	Hematocrit 60% on 2d day; total protein 4.2 Gm. per 100 cc. and chlorides 76 mEq 2d day; see table 2 for complete details	First operation on 45th day; 2d operation on 62d day; six additional operations to resurface completely; discharged healed on 153d day
W. H. ♂ 30	Entire right arm, forearm, fingers (olecranon process and flexor tendons at wrist exposed); chest, abdomen, inner aspect of both thighs and groins, penis (circumcised by burn), upper part of scrotum a continuous burn; right side and flank; 41%	Hematocrit 59% on 3d day; chlorides 89 mEq on 3d day; total protein 6.5 on admission to 4.7 Gm. per 100 cc. on 3d day	First skin graft 39th day; four subsequent operations; discharged on 112th day, healed
S. M. ♀ 7	Right arm, left arm, upper forearm, both thighs, lower chest, abdomen, right flank, side of chest, right lower back; 34%	Hemoglobin 118% 2d day; chloride 69 mEq on 10th day; total protein to 5.2 Gm. per 100 cc. on 5th day	First skin graft 44th day; three subsequent operations; discharged 136 days, healed
B. S. ♀ 8	This case treated at the Babies Hospital, New York. Entire back, both upper arms, right axilla and right chest, left buttock, right thigh; 34%	Hematocrit 59%; plasma proteins dropped to 4.2 Gm. per 100 cc. and chlorides to 83 mEq; plasma volume 720 cc. on 1st day increased to 1,170 cc. after therapy; see table 3 for complete details	5% sulfathiazole emulsion used; surface oozing through dressings less than in similar cases treated with plasma; dermatone grafts placed in four operations, discharged healed on 86th day
M. H. ♀ 57	Left arm, forearm, hand and fingers (except palm); left side and axilla, both legs, both outer thighs and buttocks; 32%	Hematocrit 50% on 1st day to 38% on 3d day; chlorides 85 mEq on 3d day	First skin graft 24th day; died 13 days postoperatively, 35 days after admission; hematuria, hypernephroma ?
G. E. ♀ 5	Left arm, axilla, left half of chest and abdomen, left half of back to midline; 23%	Total protein to 5.25 Gm. per 100 cc.; chlorides 95 mEq on 2d day	First skin graft on 31st day; two additional operations; healing on 75th day
A. G. ♀ 35	Both buttocks, both thighs, left leg; third degree areas on both thighs and legs; 19%	Hematocrit 54.7%; plasma chlorides dropped to 87 mEq; urine chlorides 0.14 Gm. in 24 hrs.	Patient refused grafting operation; granulations healing slowly at 2 mos.; still in hospital
M. B. ♀ 1	Face, all extremities, thorax, abdomen and back; 80%; pulmonary edema	Admission values normal	Admitted in pulmonary edema with carbon monoxide poisoning; died in 4 hours
C. G. ♂ 29	Case with second degree burns only. Left arm, shoulder, upper half of back. All deep second degree burns; 16%; this case is included because of pronounced shock, blood pressure 90/50 and opportunity for complete blood studies	Hematocrit to 54% 2d day; total protein dropped from 6.6 (adm.) to 6.1 on 3d day; chlorides dropped from 112 mEq (adm.) to 89 mEq on 4th day with no chloride in urine	No grafts needed; discharged on 17th day, healed

The percentages refer to third degree area only (except C. G. above).

It is of interest to compare these cases (9 additional cases appear in the author's reprints) with the not dissimilar group of 10 burn cases which required skin grafting following the Cocoanut Grove fire.[4] The burns in this group including first and second degree areas were reported to range from 8.5 to 50% of body surface. A total of 68 units of plasma was used in the first 3 days for the 10 patients.

* Since this table was compiled, 6 additional patients with extensive full thickness (third degree) burns and 3 patients with some partial thickness burns have been treated with sodium lactate. All recovered from shock and showed the typical blood and urine changes described.

circulation is essential. It is possible that in our cases external plasma loss was reduced by the neutralized tannate ionized sulfadiazine ointment applied locally[14] without pressure bandages. The recent studies of Drinker,[30] however, have demonstrated the high protein content of the increased quantity of lymph obtained by cannulating lymph ducts draining burned extremities. It is possible that plasma proteins not actually lost from the surface may be returned relatively soon to the blood stream via the lymph channels, particularly in view of the delayed clotting when no pressure is used.[31] (Comparative observations indicate substantially greater surface loss of plasma in plasma treated cases than in sodium lactate treated cases.)

and the medical staff and nurses are relieved of this burden. The sodium lactate costs but a few cents and the hospital supplies of blood and plasma are conserved. The problems of sterile solutions are eliminated.

It is scarcely necessary to mention the military advantages of the simplification of shock therapy that would follow conclusive demonstration of the efficacy of this treatment of burn shock.[32] For the present at least, the emergency use of this method under circumstances in which plasma is not immediately available seems clearly indicated.

This preliminary report will be followed by a more detailed report in which studies of the circulation by the shock group[28] will be combined with measurements

29. Fine, J.; Seligman, A. M., and Frank, H. A.: Traumatic Shock, Ann. Surg. **118**: 238 (Aug.) 1943.

30. Glenn, W. W. L.; Moos, T., and Drinker, C. K.: Observations on the Physiology and Biochemistry of Quantitative Burns, J. Clin. Investigation **22**: 451 (May) 1943.

31. Glenn, W. W. L.; Gilbert, H. M., and Drinker, C. K.: The Treatment of Burns by the Closed-Plaster Method, with Certain Physiological Considerations Implicit in the Success of This Technique, J. Clin. Investigation **22**: 609 (July) 1943.

32. Rosenthal[28a] has recently developed a technic for the experimental production of uniformly fatal traumatic shock by means of tourniquets. Therapeutically isotonic solutions of sodium salts were more effective than equal volumes of plasma. Plasma was slightly more effective by mouth than by vein. Similar experiments with radioactive sodium in this type of shock showed the enormous deposit of sodium in traumatized tissues,[28] analogous to the redistribution following thermal burns but quantitatively of greater magnitude.

of the changes in electrolytes and body water and radioactive sodium in both plasma and sodium lactate treated cases. Final judgment should await such evaluation.

CONCLUSION

This preliminary report describes the clinical use of isotonic sodium lactate solution administered orally (instead of intravenous plasma) in combating the shock phase in severe, extensive, third degree burns. Representative data indicate the magnitude of the biochemical and especially electrolyte and fluid changes after severe burns.

The results were so successful as to warrant further extensive trial of this therapy. There was but one death (which occurred within four hours after admission) in 17 cases[33] of full thickness burns.

The military advantages of this innovation are apparent.

ALLOXAN IN THE TREATMENT OF INSULIN PRODUCING ISLET CELL CARCINOMA OF PANCREAS

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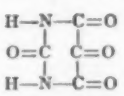
Previously reported studies confirmed the fact that alloxan:



injected intravenously into rabbits[1] and dogs[2] causes specific necrosis of the islets of Langerhans (fig. 1) and epithelium of the convoluted tubules of the kidney. In some dogs transitory or prolonged hyperglycemia occurred with relatively little elevation in the blood nonprotein nitrogen.

These studies[2] were carried out preliminary to the use of alloxan as a chemotherapeutic agent in the treatment of a patient with insulin producing islet cell carcinoma that had metastasized extensively to the peritoneum and liver. The rationale for the use of alloxan in the treatment of this patient was that, since the radiosensitivity of tumors roughly parallels the radiosensitivity of the normal tissues from which they originate, a chemical agent with specific noxious effect on pancreatic islet cells might influence favorably an insulin producing islet cell carcinoma. Since insulin producing islet cell carcinoma appears to be very rare, and since in a collected series of 8 patients[3] the longest survival was eleven months after onset of the attacks, except in 1 instance in which survival lasted twenty-one months, such a report is deemed justifiable as possibly affording suggestions for studies in similar instances wherever and whenever they may be observed, as evidence will be presented to indicate that some symptomatic benefit resulted from the treatment.

In one of the previous reports[4] it was stated that alloxan was without apparent effect in man because injections totaling 220, 400 and 950 mg. per kilogram in 3 patients respectively did not result in immediate spectacular hyperglycemia followed by spectacular hypoglycemia and then prolonged hyperglycemia with elevation of blood nonprotein nitrogen as was the case in rabbits and dogs receiving doses of 200 mg. per kilogram. The patient with islet cell carcinoma was the one who received 220 mg. per kilogram, and subsequent events proved that the previous statement of the ineffectiveness of alloxan in the treatment of this patient was erroneous. Also further experience has shown that alloxan is effective in man but that the latter requires much higher doses than animals (rabbit and dog). The islet cell carcinoma patient's earlier history and course have been reported elsewhere in the literature.[5]

A summary of the history follows:

J. L., a white man aged 32 at onset of illness in April 1939, had attacks of hyperinsulinism which were rather typical: there was numbness about the face, perspiration, amnesia, at times maniacal conduct and then loss of consciousness, relieved by ingestion of dextrose. Later interrogation revealed that "fainting attacks" and brief periods of amnesia had occurred at irregular intervals during 1937 and 1938.

In September 1939 exploratory laparotomy was performed in another institution. Two tumors were reported in the body and tail of the pancreas, one 7 cm. in diameter and, adjacent to this, a smaller one 1.5 cm. in diameter. Biopsy and pathologic examination revealed islet cell carcinoma.

From October 1939 to January 1940, attacks of hyperinsulinism occurred daily or several times a day if proper spacing of ingestion of food, orange juice or candy was not done.

Jan. 4, 1940, resection of a large islet cell tumor replacing the body and tail of the pancreas and extending onto the stomach and first loop of the jejunum was performed. Only the head of the pancreas remained in situ. No metastases were encountered. Microscopic sections showed invasion of large veins by the tumor.

January 1940 to June 1942 there was freedom from attacks, the patient's general health being excellent.

In June 1942 the attacks occurred again, two or three times a week, and were relieved by ingestion of orange juice.

In August the third laparotomy disclosed numerous hepatic metastases together with involvement of the upper abdominal lymph nodes and the peritoneum. The head of the pancreas presented no gross tumor. In order to reduce insulin producing tissue, all the remaining head and neck of the pancreas were resected except an oval portion of the former about 2 cm. in diameter and 0.5 cm. in thickness. Biopsy of a metastatic hepatic nodule was performed (fig. 2).

The preoperative fasting blood sugar level was 37 mg. per hundred cubic centimeters (not in attack). The fasting blood sugar the day after operation was 138 mg., the third day 147 mg. and from the fourth to the ninth day it varied from 83 to 53 mg. per hundred cubic centimeters. No attacks occurred during the postoperative period.

In September and October x-ray therapy was directed to the upper abdomen; 1,700 roentgens was delivered into the liver by Dr. A. H. Dowdy of the Strong Memorial Hospital, Rochester, N. Y.

From September to November 1942 there was freedom from attacks.

Late in November the attacks recurred, one a day, but they were easily controlled by ingestion of orange juice, dextrose or food.

From Dec. 15, 1942 to February 1943 x-ray therapy resulted in improvement after two weeks of treatment. The patient was

33. There are now 6 additional patients with extensive full thickness (third degree) burns and 3 patients with some partial thickness burns that have been treated with sodium lactate only. All recovered from shock and showed the typical blood and urine changes described.

From the Department of Surgery, the University of Chicago.
This study was facilitated by the O. C. Miller Fund for Cancer Research, the University of Chicago.

1. Dunn, J. S.; Kirkpatrick, J.; McLetchie, N. G., and Telfer, S. V.: Necrosis of the Islets of Langerhans Produced Experimentally, J. Path. & Bact. 55: 245-257 (July) 1943.

2. Brunschwig, Alexander, and Allen, J. G.: Specific Necrosing Action of Alloxan on Islet Cells, Cancer Research, to be published. Brunschwig, Goldner, Allen and Gomori.[4]

3. Brunschwig, Alexander: The Surgery of Pancreatic Tumors, St. Louis, C. V. Mosby Company, 1942.

4. Brunschwig, Alexander; Goldner, M. G.; Allen, J. G., and Gomori, George: Alloxan, J. A. M. A. 122: 966 (July 31) 1943.

5. Brunschwig, Alexander, and Clark, D. E.: Large Islet Cell Tumor of the Pancreas, Surgery 9: 554-560 (April) 1941.

free from attacks from the middle of February to March 10, 1943, when they recurred with increasing frequency. On one occasion he was comatose for five hours in spite of frequent ingestion of dextrose.

From March to June attacks occurred two to five times a day and were increasing in severity. X-ray therapy was

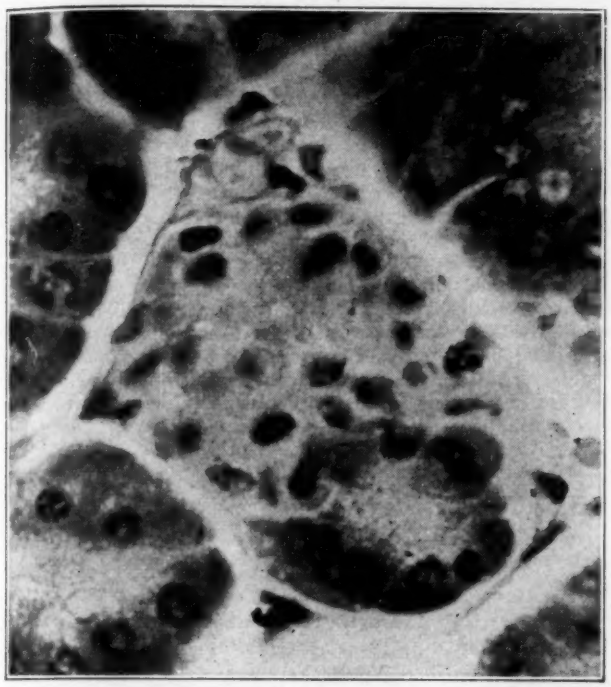


Fig. 1.—Section of islet of Langerhans in pancreas of dog dying twenty-four hours after injection of 200 mg. of alloxan per kilogram. Most of the cells in this islet are necrotic. Note normal appearance of acinar cells about necrotic islet and absence of leukocytosis.

administered in May; one week there was only one attack, then recurrence two to five times a day. In an attempt to avoid them he would ingest food or orange juice every two or three hours throughout the day and night. Omitting a feeding resulted in attack; likewise the slightest exertion, such as walking one-half block or attempting to mow the lawn, induced unconsciousness. The continued vigil of the patient's wife made possible his recovery from and survival in spite of the attacks, since she would force him to drink orange juice at the onset and awakened every two hours during the night to give him dextrose. On a few occasions unconsciousness lasted for an hour or more. Frequently a severe attack developed two hours after a heavy meal. Recovery from an attack was becoming less prompt after ingestion or injection of dextrose.

The patient was readmitted to Billings Hospital on June 2, 1943. Examination of the abdomen was essentially negative. The general appearance was that of a man in excellent health. He weighed 112 Kg. Fasting blood sugar was 14 mg. per hundred cubic centimeters just prior to an attack. He was placed on a high caloric high carbohydrate diet, 4,200 to 5,000 calories a day. Feedings were given at 7 and 10 a. m., noon, 3, 6 and 10 p. m. and at midnight and 3 a. m. On this regimen attacks could not be altogether avoided, since if food was not taken promptly at the designated hour an attack developed with blood sugars below 14 mg. per hundred cubic centimeters. A control observation period was made for ten days. During this interval, on the dietary regimen mentioned, fasting blood sugars taken at 7 a. m. just before a feeding and when the previous feeding was at 3 a. m. averaged 16 mg. per hundred cubic centimeters (five determinations).

Between June 15 and 19 five intravenous injections of alloxan were given, the individual doses ranging from 2.8 to 11.2 Gm. each, dissolved in 500 cc. of isotonic solution of sodium chloride. The total dose was 25.2 Gm. The patient weighed 112 Kg., thus affording a dose of 220 mg. per kilogram. This dose was invariably fatal for dogs and produced immediate hyperglycemia, then hypoglycemia; and by forty-eight hours a sustained hyperglycemia was present often with elevated blood nonprotein nitrogen due to renal damage.

Since it was felt that any one attack might prove fatal to the patient in spite of prompt administration of dextrose, no attempt was made to withhold food following an injection. Thus the dietary regimen remained in force. Blood sugar levels were determined during the immediate postinjection periods but are not significant.

Blood sugars taken at 7 a. m. each day before food during the six day period following the last injection averaged 21 mg. per hundred cubic centimeters. Since this was only 5 mg. per hundred cubic centimeters higher than the average before injection, little significance was then attached to these findings although at this level no attack developed. During the three days following the injections there were mild attacks each day before lunch at 12 noon. On the fourth day there was no attack, on the fifth day a mild attack at noon, on the sixth day no attack, on the seventh day a mild attack. No attacks occurred on the succeeding three days.

The patient was discharged July 4, 1943. During the fourteen day period at home the patient ate three regular meals a day. In addition he ate a sandwich at 10 a. m., the dessert from the noonday meal was saved until 3 p. m., and the dessert from the evening meal was taken at 9 p. m. Orange juice was taken at midnight and at 3 a. m. On this regimen, which did not include as much food as was consumed prior to the last admission, the patient experienced only a total of six "mild" attacks during the fourteen days. One of these was at 1 a. m. and the others about 3 p. m. on five different days. The patient attributes the attacks to irregularity in ingestion of between meal feedings. This contrasts to two to five severe attacks daily prior to the last admission, recovery from many of which was not at all prompt.

Because of the general improvement in the nature and frequency of the attacks he was readmitted to the hospital on

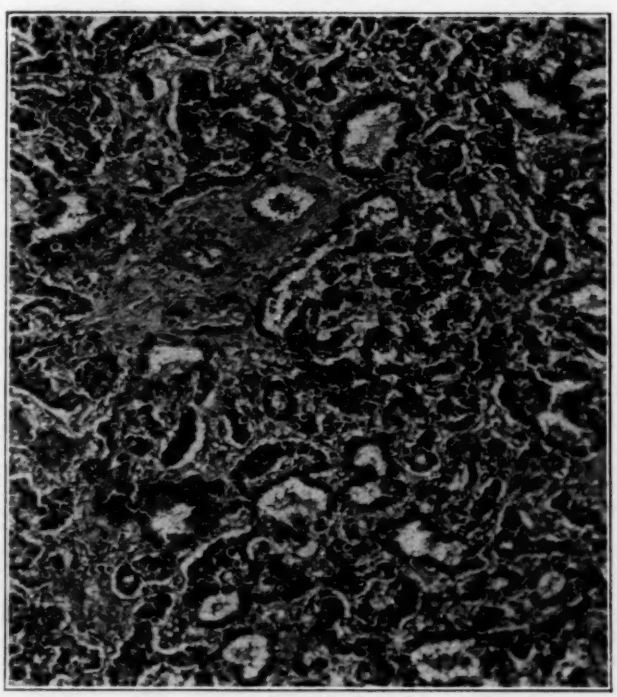


Fig. 2.—Section of hepatic metastasis of insulin producing islet cell carcinoma of the pancreas (patient J. L.). Note formation of tubules and cords of neoplastic cells. Biopsy taken August 1942; patient alive and in excellent nutritive state, October 1943.

July 18 for further study. Irrelevant observations were made during the period up to July 30. On July 31, August 1 and August 2 respectively 33.6, 33.6 and 25 Gm. were injected intravenously, dissolved in 700 to 1,000 cc. of isotonic solution of sodium chloride. On August 10 he received 34.5 Gm. and on August 11 8.6 Gm. On August 13, 14 and 16 he received

10, 10 and 20 Gm. respectively. On August 20, 21, 22 and 23 he received 18.2, 26, 26 and 33 Gm. of alloxan respectively. The injections from July 30 to August 23 totaled 278.5 Gm. The patient weighed 112 Kg., and thus the dosage was equivalent to approximately 2.5 Gm. per kilogram during this period. The average fasting blood sugar at 7 a. m. during this period was 33 mg. per hundred cubic centimeters. On August 21 it was 35 mg., on August 24 145 mg., on August 25 35 mg. and on August 26 53 mg. per hundred cubic centimeters. These values were considerably higher than obtained prior to injections of alloxan in June.

Space does not permit a further detailed account of his course during this period. However, there was evidence of very definite improvement. The number of attacks decreased appreciably to a total of seven during the twenty-seven days of observation. Two of these appeared to be drug reactions, as mentioned later. One severe attack occurred on the fourteenth and on the twenty-first day which were undoubtedly due to hyperinsulinism. The three other attacks in as many days were "mild" in that numbness and partial loss of consciousness occurred which were promptly relieved by orange juice. In twenty days there were no attacks whatever, a situation which had not obtained during a similar period since before November 1942. Of considerable importance is the fact that the caloric intake during the period referred to was definitely reduced, as hundred cubic centimeters, October 3 27 mg., October 4 39 mg. October 5 55 mg., October 6 30 mg. and October 7 67 mg. per hundred cubic centimeters. The average for October 2 to 7 inclusive is 44 mg. per hundred cubic centimeters. He was again discharged in very good condition on October 7 and returned to his home in another city. There were no attacks from October 2 to 17 inclusive, except for two mild seizures on October 11.

Attacks of hyperinsulinism recurred with increasing frequency between October 18 and November 11, occurring daily after November 1 (fig. 3). During the period of November 6 to 13 he received a total of 1.05 Gm. of alloxan per kilogram. The fasting blood sugar on November 12 was 298 mg. per hundred cubic centimeters. Between November 13 and 20 it averaged 31 mg. per hundred cubic centimeters. From November 11 to 30, nineteen days, there were no attacks except one "mild" seizure on November 21 and 27 respectively. On December 1 there were three attacks.

The patient, although in excellent physical condition, had become exceedingly impatient for permanent relief. Since the middle of November he requested reoperation to "remove all remaining insulin producing tissue." He had become exceedingly averse to venipuncture and this had become very difficult because of sclerosis of the superficial veins resulting from the numerous previous injections for various purposes during the

TABLE 1.—*Comparison of Patient J. L.'s Condition Prior to and During Periods of Alloxan Injections and After Alloxan Injections*

	Prior to Admission March 10-June 2, 1943	First Series of Alloxan Injections June 15-30	Interim July 4-18	Second Series of Alloxan Injections July 30-August 26	Postinjection Period August 27-September 10
Alloxan received	None	220 mg. per kilogram	None	2.5 Gm. per kilogram	None
Attacks of hyperinsulinism	"2 to 5 attacks a day"; some "very severe"	One mild attack (partial loss of consciousness) on each of 8 days; seven days, no attacks	One mild attack on each of 6 days; eight days without attacks	An attack on each of 7 days (2 of these "drug reactions"); twenty days without attacks	No attacks
Fasting blood sugar 7 a. m.	No determinations	Average of 5 determinations on 5 days before alloxan was started, 16 mg. per 100 cc.; average of 11 days after alloxan started, 22 mg. per 100 cc.	No determinations	Average, 33 mg. per 100 cc.; last three days, 145, 35 and 53 mg. per 100 cc. respectively	Eighth day after discharge 53 mg. per 100 cc.
Average daily caloric intake	No estimate; in addition to regular meals, took food or orange juice every 2 or 3 hours, night and day	4,700 (666 Gm. carbohydrate); eight feedings in 24 hours	No estimate; "ate less than in May 1943"	2,660 (300 Gm. carbohydrate); midmorning, midafternoon and midnight feedings eliminated; three meals a day, sandwich at 10 p. m., orange juice 200 cc. at 3 a. m.	Three meals a day; sandwich at 10 p. m.; no other extra feedings; "eating about half as much as in May 1943"

were the number of feedings. On a number of days the patient would arise at 7 a. m., having had a sandwich the previous night at 10 p. m. and 200 cc. of orange juice at 3 a. m., go to the bathroom and shave, take a bath and return to his room for breakfast at 8. Previously an attack would have occurred had he not eaten immediately on awakening.

From August 20 to September 10 there were no attacks, a period of twenty-one days. Table 1 summarizes the patient's course from the end of March 1943 to Sept. 10, 1943. He left the hospital on August 26 and the fasting blood sugar on September 3 was 53 mg. per hundred cubic centimeters. On September 11 the first recurrent attack was experienced. Figure 3 shows the increased frequency of attacks after Sept. 11, 1943. From September 20 to 24 inclusive the patient was quite active and engaged in his usual pursuit of a traveling commercial representative. The attacks were "mild" in that ingestion of orange juice brought about immediate relief. He was readmitted to the hospital on September 28; a diet totaling 2,500 calories was prescribed. The fasting blood sugar was 17 mg. per hundred cubic centimeters on September 29, and during the morning he experienced a typical attack. He received 39 Gm. of alloxan in 3,000 cc. of isotonic solution of sodium chloride intravenously on September 29 and 36 Gm. of alloxan in a similar manner on October 1, affording a total dose of 75 Gm., or 652 mg. per kilogram (weight 115 Kg.). On September 30, the day after alloxan was given, the fasting blood sugar was 27 mg. per hundred cubic centimeters. On October 1 it was 16 mg. per hundred cubic centimeters (no attack). October 2, the day after the second alloxan injection it was 39 mg. per

preceding four years. Following the three attacks on December 1 he took the position that he would refuse all further treatment except operation. Accordingly, on December 2 laparotomy was again performed. The liver appeared small; one metastasis about 5 cm. in diameter was resected with about one third of the left lobe of the liver. Two small tumor nodules were resected from the anterior aspect of the right lobe. Other nodules were palpated on the deep surfaces of the right lobe. The remaining head of the pancreas was sclerotic. It was not possible to determine by palpation the presence of another tumor in it. Since the purpose of the operation was to remove as much insulin producing tissue as possible, pancreatoduodenectomy was performed to remove remaining pancreatic tissue. During this procedure the portal vein was opened, and ligation of it and of the superior mesenteric vein became necessary. Two hours after completion of the operation the patient died suddenly.

Necropsy (performed in the Department of Pathology) revealed multiple metastatic nodules within the liver. There was no gross evidence of neoplasm elsewhere. Microscopic sections of the surgically removed pancreas revealed normal acinar tissue and no evidence of necrotic islet cells—indeed, these appeared normal. Sections of the tumor nodules revealed viable tumor cells and no evidence of necrosis comparable to that seen in the islet cells in the pancreas of the dog and rabbit resulting from alloxan. Sections of the liver revealed no evidence of acute damage to hepatic cells. There was no central hemorrhagic necrosis in the lobules, but scattered small foci of lymphocytes in some of the interlobular septums were seen. Sections of the kidneys revealed a few scattered casts

in the tubules; there was no necrosis of epithelium of the convoluted tubules. The thyroid, testis, hypophysis, adrenals and parathyroid showed no significant alterations.

UNTOWARD REACTIONS

Severe reactions developed that are attributed to the drug. The first, August 2, occurred on the third of a series of three daily injections; at 2 p. m. 25 Gm. of alloxan was given and at 3 p. m., as the injection was finished, nausea and emesis occurred, followed by a lapse into coma. One liter of 10 per cent dextrose was immediately started by the intravenous route and was accompanied by revival of the patient. The next day icterus was present and the patient felt decidedly depressed. His food intake was equivalent to 1,660 calories during the day, but there were no attacks. On the next day the icterus index was 42. By August 7 the red blood cell count was 2,100,000 and transfusions were given. A second reaction occurred on August 10, when after receiving 34.5 Gm. of alloxan there was severe chilling, and vomiting on one occasion. Despite the severe chill with pronounced muscular contractions which lasted forty-five minutes and a total caloric intake for the day of 2,200, no attack of hyperinsulinism developed. By August 24 the red blood cell count was 1,700,000. Additional transfusions were given.

Another series of disturbances occurred during the injection on October 1; after 20 of the 39 Gm. of alloxan was received, severe nausea and repeated vomiting occurred following an initial chill and rise in temperature to 101 F. This subsided in a few hours. During the second injection on October 1 a similar reaction occurred. Nausea persisted for four days, accompanied by a burning sensation in the epigastrium, and food intake was limited to 1,600 calories or less during these days. It is significant that in spite of such relatively low caloric intake there were no attacks. Furthermore, by October 3 the red blood cell count, which on September 30 was 4.8 million, fell to 1.8 million, and icterus developed but cleared in two days. Four liters of blood was administered in twenty-four hours (October 2-3). The blood nonprotein nitrogen remained within normal limits during all of the injection periods. However, following some of the injections a few casts and red blood cells were noted in the urine and transitory albuminuria (1 plus) was observed.

Table 2.—*Effect of Alloxan on Blood Sugar in Four Control Patients*

Patient	Days	1	2	3	4	5	6	7	8	9	10
M. S.	Fasting blood sugar, mg. per 100 cc.	83	121	69	103	71	70	94	75	73	85
	Alloxan, mg. per kilogram	50	50	50	270	..	500	..	..	..	..
R. L.	Fasting blood sugar, mg. per 100 cc.	78	55	65	61	..	..	..	..	..	..
	Alloxan, mg. per kilogram	200	200	..	..	..	..	..	..	..	..
J. F.	Fasting blood sugar, mg. per 100 cc.	..	..	..	71	72	78	..	..	..	55
	Alloxan, mg. per kilogram	300	150	..	..	..	..	..	..	..	..
Sim.	Fasting blood sugar, mg. per 100 cc.	78	..	74	..	84	122	103	92	..	85
	Alloxan, mg. per kilogram	..	..	..	..	340	..	..	..	..	..

CONTROL OBSERVATIONS

In order to ascertain whether or not alloxan was effective for patients not presenting insulin producing islet cell carcinoma, injections were carried out on subjects with carcinomatosis of other types. The doses and results on blood sugar levels are summarized in table 2.

A slight elevation of blood sugar was noted in patient M. S. In patients R. L. and J. F., who received total doses of 400 and 450 mg. per kilogram respectively, no effects were noted. In patient Sim., who received 340 mg. per kilogram in one injection and experienced a chill, nausea and cyanosis for several hours, the fasting blood sugar rose to 122 mg. per hundred cubic centimeters on the following day, 103 mg. the second day, 92 mg. the third day and 85 mg. per hundred cubic centimeters the fourth day after injection. Thus in 2 of the 4 patients slight effects were noted. The doses were in excess of the minimum lethal dose for dogs and rabbits.

A fifth patient was given the largest single injection of this control group and died six hours after termination of the injection. A large carcinoma of the lower rectal colon had been excised by the combined abdominoperineal route a few months previously. This was dissected off the prostate. At the final admission there was reopening of the posterior wound with recurrence of carcinoma; severe cystitis and general aggravation in debility of the patient was observed. On Aug. 27, 1943 food was withheld all day; the fasting blood sugar at 7 a. m. was 69 mg. per hundred cubic centimeters. At 11 a. m. it was 85 mg. per hundred cubic centimeters. The patient weighing 57 Kg. was given 200 mg. of alloxan per kilogram dissolved in 1,000 cc. of isotonic solution of sodium chloride; by 12:20 p. m. the injection was completed and there was a slight chill. The blood sugar on this occasion was 85 mg. per hundred cubic centimeters, one hour later 94 mg., two hours after injection 104 mg., three hours 117 mg. and four hours later 112 mg. per hundred cubic centimeters. The next morning it was 73 mg. per hundred cubic centimeters.

On September 1 the morning fasting blood sugar was 88 mg. per hundred cubic centimeters. Food again was withheld all day. Shortly before noon intravenous injection of 34 Gm. of alloxan (almost 600 mg. per kilogram) in 1,200 cc. of saline solution was started. At 12:30 p. m., when all but 300 cc. was injected, there was a moderately severe chill and cyanosis; the blood sugar was 76 mg. per hundred cubic centimeters. The remainder of the solution was injected more slowly at 2:30 p. m. The blood sugar was 46 mg. per hundred cubic centimeters. By 4:30 p. m. the patient, who had complained for a number of days of abdominal pain and diarrhea, stated that the pain was worse. He arose from bed and sat in a chair for a brief period, then returned to bed. There were restlessness, cyanosis, perspiration, dyspnea; the pulse was 94, blood pressure 160/100, blood sugar 16 mg. per hundred cubic centimeters. There was no loss of consciousness and he was well oriented and conversed normally, answering questions correctly and promptly. Fifty cc. of 50 per cent dextrose was given intravenously, and a hypoclysis of dextrose was begun. He requested and obtained a cup of coffee with sugar and cream, which he drank. The general condition improved and the pain and restlessness subsided. He appeared to have recovered from the reaction. At 7:15 p. m. he died suddenly. Portions of the pancreas, kidney and liver were obtained and fixed about three hours after death. The pertinent macroscopic findings were a number of scattered petechial areas in the liver and chronic cholecystitis; the pancreas appeared normal. Microscopic study of the pancreas revealed questionable evidence of injury to a number of cells in some of the islets, although many islets were not affected. The period of survival following injection of alloxan was undoubtedly too brief (seven hours) to permit of the development of more extensive changes. Microscopic study of the liver showed rather diffuse degenerative changes in the hepatic cells, but there was no central hemorrhagic necrosis. The adrenals were normal. There was also, of course, carcinomatosis. Degenerative changes were noted in the renal tubules, but these changes cannot definitely be ascribed to alloxan in view of the chronic progressive deterioration of the patient over several months prior to death.

COMMENT

The patient with islet cell carcinoma appears to have obtained temporary symptomatic relief by the repeated injections of alloxan. As a control the histories of previously reported cases reveal a relentless progress of the disease with increasing frequency of attacks which ultimately proved fatal in spite of administration of what

would appear to be adequate quantities of dextrose. In no instance except one was there spontaneous remission of the attacks. In this exceptional case (Gray [6]) attacks subsided after removal of the pancreatic tumor where hepatic metastases were present. This patient received large amounts of dextrose postoperatively but died six weeks after excision, and the cause of death was not clearly apparent. Since some islet cell carcinomas have been observed not associated with hyperinsulinism, a plausible explanation for the situation is that only the cells of the primary growth retained insulin producing properties, whereas the metastatic growths did not retain these properties.

The evidence for symptomatic improvement in the case cited in detail is as follows: Attacks of hyperinsulinism recurred after exploratory laparotomy and biopsy had revealed hepatic metastases of the previously

AUGUST

Sun	Mon	Tues	Wed	Th	Fri	Sat
22†	23†	24	25	26	27	28
29	30	31				

SEPTEMBER

Sun	Mon	Tues	Wed	Th	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11*
12	13	14	15	16	17*	18*
19*	20	21	22	23	24?	25*
26*	27**	28	29†	30*		

OCTOBER

Sun	Mon	Tues	Wed	Th	Fri	Sat
					1†	2
3	4	5	6	7	8	9
10	11**	12	13	14	15	16
17	18*	19	20	21*	22	23*
24*	25*	26*	27	28	29	30*
31						

NOVEMBER-DECEMBER

Sun	Mon	Tues	Wed	Th	Fri	Sat
	1*	2*	3***	4*	5*	6*†
7*†	8*†	9	10*†	11*†	12	13
14	15	16	17	18	19	20
21*	22	23	24	25	26	27
28	29	30	1***	2		

Fig. 3.—Calendar showing attacks of hyperinsulinism (* after date). † days on which alloxan was injected.

removed islet cell carcinoma with no evidence of neoplasm in the remaining pancreas; hence the metastases produced insulin. Over a period of several months attacks developed with progressive increase in frequency and severity, finally occurring at the rate of two to five a day. It was apparent that there was increasing difficulty in obtaining recovery from attacks by ingestion and injection of dextrose. The frequency and severity of attacks was definitely diminished following injection of alloxan. Periods of several days (as long as three weeks) occurred without attacks. Improvement in the situation occurred in the face of substantial curtailment of ingestion of food. Fasting blood sugar levels became elevated as compared with preinjection determinations. Finally, improvement followed injections with recurrence of attacks after a period, and subsequent improvement occurred after repetition of the injections. Studies on dogs revealed that whereas some islet cells were injured, resulting in a diabetic state, the majority were not destroyed or much affected and recovery ensued with return to normal blood sugar levels. It might therefore have been predicted on the basis of the animal studies that a series of injections in this case would have resulted in temporary improvement with return of attacks. This, as stated, is what did occur.

Two other features of the case deserve special mention: 1. As a result of repeated attacks of hyperinsulinism a tolerance to low blood sugar levels developed. The patient was able to conduct himself normally with blood sugars as low as 20 mg. per hundred cubic centimeters. His "attack level" was 14 mg. per hundred cubic centimeters or less. 2. Forced ingestion of food in an attempt to ward off attacks resulted in a 35 pound (16 Kg.) weight gain over a period of seven months after carcinomatosis of the liver was observed at laparotomy. This would indicate that "carcinoma cachexia" is merely the result of gradual reduction in caloric intake and not due to a "toxemia" originating from the tumor cells. Thus successful forced nutrition in some cancer patients should prove to be of palliative value. As already indicated, man appears much more resistant to the action of alloxan than the rabbit or the dog. Furthermore, in man no evidence of injury to the convoluted tubules of the kidney was observed, whereas in animals this was a frequent finding.

Injury of the insulin producing system of an islet cell in itself does not signify that the cell as a whole might be fatally injured, in that it might well be possible to inhibit insulin production while the cells continue to survive and to proliferate. Studies in animals would suggest that the cell itself as well as the insulin producing mechanism is injured by alloxan. However, in the case reported the normal and neoplastic islet cells were not necrosed but there was temporary inhibition of insulin production. How significant this substance may prove to be in the symptomatic and palliative treatment of one specific type of cancer (insulin producing islet cell carcinoma) can be demonstrated only after further trial and more prolonged observations. Temporary relief from attacks of hypoglycemia in itself would constitute effective palliation. Alloxan might afford beneficial effects, at least temporary, in those patients with recurring hyperinsulinism after operation at which an islet cell adenoma is not found and pancreatic tissue is removed without lasting benefit.

SUMMARY

1. Alloxan, the ureide of mesoxalic acid, also a component of the uric acid molecule, has been observed to produce specific necrosis of the islets of Langerhans in the rabbit and dog with resultant hyperglycemia. Similar histologic effects were not observed in patients receiving larger doses.

2. Alloxan was administered as a chemotherapeutic agent to a patient with insulin producing islet cell carcinoma, metastatic to the liver, who presented recurring attacks of hyperinsulinism increasing in frequency and severity. The rationale for this was that, since the radiosensitivity of tumors roughly parallels the radiosensitivity of the normal tissues from which they arise, a chemical agent exerting specific noxious effects on normal pancreatic islet cells might influence favorably insulin producing islet cell carcinoma.

3. Temporary symptomatic relief was obtained in that the attacks were obviated for brief periods following each series of injections. Death resulted from a complication at laparotomy. Alloxan did not cause necrosis of the malignant islet cells.

6. Gray, Lorne M.: Functioning Islet Cell Carcinoma with Metastases to Liver, Am. J. Path. **18**: 633-641 (July) 1942.

CLINICAL EXPERIENCES WITH DICUMAROL

REPORT OF EIGHTEEN CASES

LIEUTENANT (jg) HOWARD D. ZUCKER (MC) U.S.N.R.

The early favorable reports [1] on the use of the new synthetic orally administered anticoagulant dicumarol [2] have led me, during recent months, to a trial of the drug in 18 cases at the Lenox Hill Hospital. Opinions drawn from the use of any drug in such a small series are necessarily of limited value, but I feel that a report of the observations may be of some assistance in the evaluation of a drug which has variously been branded as useless or as excessively dangerous in effective dosage [3] and, on the other hand, as of great value in the prevention of pulmonary embolism.[4]

SELECTION OF PATIENTS

Of the 18 patients treated, the largest group, 9, were suffering from clinically evident thrombophlebitis of the lower extremities. Five patients received prophylactic doses of dicumarol, following operation or delivery, because of a history of previous episodes of thrombosis or embolism. Two patients were treated subsequent to a postoperative pulmonary infarction. One patient was treated following a cavernous sinus thrombosis, and 1 was treated when cavernous sinus thrombosis seemed imminent. No patients with definite evidence of liver damage or with definite renal impairment were accepted for treatment because of the experimental evidence that such damage is a contraindication to the use of dicumarol.[5]

DOSAGE AND CONTROL

All patients were classified according to blood group prior to therapy, and all had daily determinations of the plasma prothrombin level (except on Sundays) performed in the hospital laboratory on undiluted plasma by the Quick method. In addition, hemoglobin determinations and red blood counts were performed every second day. Microscopic urinalyses were frequently performed in search for red cells, and physical examinations of the patients were performed daily, including arterial blood pressure determinations.

All adult patients received an initial dose of 300 mg. of dicumarol by mouth, and the following morning, regardless of the time of administration of the initial dose, an additional 200 mg. was given. Subsequent doses were given with the aim of maintaining the plasma prothrombin time level between 60 and 30 per cent of normal in accordance with the experiences of Allen, Barker and Waugh.[6] With this range in mind the usual follow-up doses were 200 mg., and administration of such doses depended both on the absolute level of the daily prothrombin determination and on the slope of the plotted curve of prothrombin values.[7] The significance of the slope of the curve must be stressed, for the prothrombin time may be excessively and dangerously lengthened if a follow-up dose is given while the slope of the curve is upward (decreasing percentage of normal), and conversely the patient may escape from the desired range if one waits for the return of the prothrombin time to a specified level rather than administering the follow-up dose as soon as a definite swing to normal (4 per cent, or 5 seconds) is noted in the curve. No limit was set on the total amount of drug to be administered to any patient.

Despite the recognized fact [8] that some persons are highly resistant to dicumarol (3 in our series) and others are remarkably susceptible (also 3 in our series) a program of dosage such as has been outlined permits maintenance of the majority of patients within the desired range of hypoprothrombinemia. It is necessary to administer follow-up doses of 300 mg. or more to patients recognized to be resistant, and reduction to 100 mg. is occasionally necessary in susceptible persons. Once therapeutic levels had been obtained, 7 of our last 10 patients treated according to the aforementioned principles were maintained at all times within the range of 62 to 30 per cent. Three cases were not entirely satisfactory, and of these 2 escaped above 62 per cent for one determination only, while the third escaped for a three day period. Chart 1 demonstrates the principles of dosage which have been discussed. In addition to dicumarol each patient received such drugs and treatments as were prescribed by the internist or surgeon in attendance. Thus sulfadiazine was given to 7 patients, and ice bags were applied intermittently over the affected region in the cases of thrombophlebitis. The patients with thrombophlebitis were given active foot exercises as soon as a therapeutic hypoprothrombinemia had been recorded.

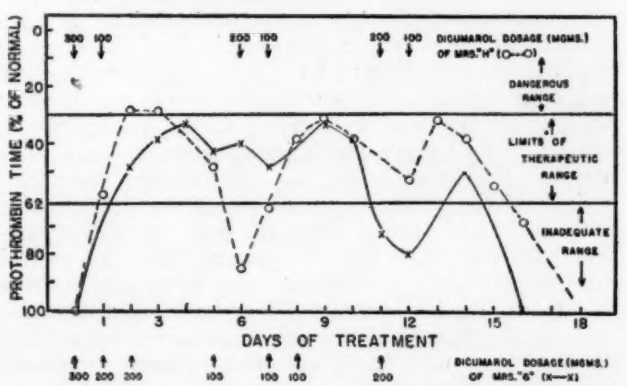


Chart 1.—Light broken line, prothrombin curve of Mrs. G. Note failure to heed 4 per cent drop in prothrombin time on tenth day with subsequent escape from therapeutic range. Heavy solid line, prothrombin curve of Mrs. H. (patient 1). Note slight overdosage on second day, escape on sixth day due to disregard of drop in curve, and proper method of dosage on eleventh and twelfth days. (See text.)

From the various services of Lenox Hill Hospital.
Dr. Zucker was one time house physician and resident roentgenologist, Lenox Hill Hospital.

This study was carried out under the guidance and encouragement of Dr. Carl Eggers, attending surgeon. The cases were made available for study through the active cooperation of many members of the attending and house staffs, including particularly Dr. Mortimer W. Rodgers, associate attending gynecologist and obstetrician.

1. Bingham, J. B.; Meyer, O. O., and Pohle, F. J.: Studies on the Hemorrhagic Agent 3,3'-Methylene-Bis-(4-Hydroxycoumarin): I. Its Effect on the Prothrombin and Coagulation Time of the Blood of Dogs and Humans, Am. J. M. Sc. **202**: 563-578, 1941. Meyer, O. O.; Bingham, J. B., and Axelrod, V. H.: Studies on the Hemorrhagic Agent 3,3'-Methylene-Bis-(4-Hydroxycoumarin): II. The Method of Administration and Dosage, ibid. **204**: 11-21 1942. Allen, Barker and Waugh.[6]

2. The dicumarol used was made available in 100 mg. capsules by the Abbott Research Laboratories, Chicago.

3. DeBakey, Michael: Dicoumarin and Prophylactic Anticoagulants in Intravascular Thrombosis, Surgery **13**: 456-459, 1943. Davidson and McDonald.[9]

4. Barker, N. W.; Allen, E. W., and Waugh, J. M.: The Use of Dicumarol (3,3'-Methylene-Bis-[4-Hydroxycoumarin]) in the Prevention of Postoperative Thrombophlebitis and Pulmonary Embolism, Proc. Staff Meet., Mayo Clin. **18**: 102-107, 1943.

5. Bollman, J. L., and Preston, F. W.: Effects of Experimental Administration of Dicoumarin: 3,3'-Methylene-Bis-(4-Hydroxycoumarin), J. A. M. A. **120**: 1021-1024 (Nov. 28) 1942.

6. Allen, E. V.; Barker, N. W., and Waugh, J. M.: A Preparation from Spoiled Sweet Clover [3,3'-Methylene-Bis-(4-Hydroxycoumarin)] Which Prolongs Coagulation and Prothrombin Time of the Blood, J. A. M. A. **120**: 1009-1015 (Nov. 28) 1942.

7. Since the prothrombin time in other laboratories is frequently reported in seconds rather than in percentage of normal, we have plotted the prothrombin time percentage from 100 per cent to 0 per cent rather than from 0 per cent to 100 per cent for clarity and comparability.

8. Conference on Therapy: Anticoagulant Drugs, New York State J. Med. **43**: 860-867, 1943.

RESULTS OF TREATMENT

(*a*) *Thrombophlebitis.*—All of the 9 patients who received dicumarol while suffering from thrombophlebitis recovered. No suggestion of embolization was observed during the course of any of these cases; this observation is in no way remarkable, since embolization during the course of clinically recognized thrombophlebitis is infrequent. The recovery of 1 of these patients can in no way be related to dicumarol therapy, since no adequate prolongation of the prothrombin time was achieved (below 62 per cent for only two days).

The average duration of dicumarol therapy in these cases was fourteen days, and the longest treatment lasted sixteen days (exception is case 1). Hospitalization, as a rule, was continued for a few days after the prothrombin time had been permitted to return to normal. It is my opinion that the duration of the illness in these cases, many of which were severe, was shorter than would have been expected without the use of dicumarol.

In the entire group there was no evidence of central extension of the thrombus once an adequate prothrombin time had been reached, although in several cases peripheral extension continued for several days.

Disappearance of pain in the affected area or pronounced diminution was observed in 7 of the cases at the time when the desired level of hypoprothrombinemia had been reached. This pain diminution persisted in contrast to the analgesic effect of ice packs, which usually lasted only a few minutes after the pack was removed and which often was unsatisfactory over long periods of time. In 1 case in which the prothrombin time escaped to normal levels the pain recurred coincident with the escape and disappeared again as control was reestablished. In another case there was a delay in establishing hypoprothrombinemia because of resistance to the drug, and the pain disappeared only when the dicumarol was finally effective in lengthening the prothrombin time.

One case of interest is presented:

CASE 1.—Mrs. H., aged 59, a housewife, was admitted on March 29, 1943 for pain, swelling and redness of the right lower extremity. There was a history of right sided thrombophlebitis one and one-half years previously, and the patient had bilateral varicose veins of long standing. Oscillometric readings showed poor arterial circulation in both lower extremities. There was an increase in signs and symptoms despite bed rest, ice packs and elevation. On April 7 dicumarol therapy was instituted and the pain and tenderness in the right thigh rapidly disappeared, although the edema persisted for two weeks. The prothrombin time was permitted to return to normal after nineteen days of treatment (April 25) and the patient was allowed up.

On May 1, six days after treatment had been discontinued, the patient complained of heaviness and pain in the left popliteal region, and an abnormal cordlike structure could be felt there. The next day tenderness in the femoral region was also encountered. Dicumarol therapy was reinstated on May 1, and a satisfactory prothrombin level was reached on May 3. The pain and tenderness rapidly disappeared and no further extension of the process was noted. On May 11 the prothrombin time was permitted to return to normal range and the patient was permitted to hang her feet out of bed on May 12 and to get up on May 15.

There was some elevation of temperature on May 16, five days after dicumarol therapy had been discontinued, and the patient began to complain of pain in the left thigh. On May 21 a firm pencil-like mass was palpable in the left thigh on its medial aspect. Dicumarol was once again started on May 24, and a therapeutic level had been reached on May 25. The patient was now "fairly comfortable," according to the nurse's notes. She experienced a little pain the following day but then remained entirely comfortable until June 1, when she complained of a brief spasm of pain. On June 7 she complained of pain most of the day, and it was found that for the first time she had escaped from a therapeutic range of hypoprothrombinemia. Within thirty-six hours a satisfactory level had been restored and the pain had disappeared. Improvement has been progressive since and the patient (June 20) is up and about, still on dicumarol.

The sequence of events in this case is strong evidence that dicumarol may favorably modify the course of thrombophlebitis. Coincidence would seem an inadequate explanation for the relationship of dicumarol therapy to this series of remissions and relapses.

(*b*) *Prophylaxis.*—Five patients were given postoperative courses of dicumarol; of these 2 had undergone general surgical procedures, 2 had been delivered by cesarean section and 1 had undergone sterilization and therapeutic curettage. Four of these patients had a history of one or more antecedent episodes of thrombosis, and 1 of these had had a pulmonary infarct. All the patients in this group had uncomplicated postoperative courses. The longest postoperative hospitalization was fifteen days.

A representative case from this group is presented:

CASE 2.—Mrs. M. M. was admitted in the third month of her first pregnancy. Four years previously she had an extensive thrombophlebitis of the left leg, which was first noted on the twelfth day after appendectomy; she was hospitalized for seventeen days thereafter and has since been subject to swelling of the left leg. One sister died of a pulmonary embolus secondary to a postpartum thrombophlebitis, and a second sister underwent amputation of her left lower extremity when a thrombosis developed after childbirth.

On May 23 sterilization and therapeutic curettage were performed and on May 26 a prophylactic course of dicumarol was started. The prothrombin time was maintained within the therapeutic range until the patient was discharged well on her eleventh postoperative day.

(*c*) *Pulmonary Embolism.*—Two patients who suffered postoperative emboli were given courses of dicumarol in the hope of inhibiting further thrombosis and embolization. Neither patient had any evidence of further embolic phenomena and both had uncomplicated recoveries. One of these patients had a thrombophlebitis of the superficial veins of her left thigh, and the local pain of which she complained disappeared at about the time that her prothrombin time reached the desired range. The other case is reported in greater detail:

CASE 3.—Mrs. S. S., aged 42, a housewife, entered the hospital the second time for vaginal bleeding secondary to adenomyosis uteri. Preoperative examination of the lower extremities was negative. An uneventful supracervical hysterectomy was performed on March 2, 1943. On March 5 the patient experienced sudden right chest pain, accentuated on inspiration and accompanied by small amounts of blood flecked sputum. The chest pain continued for several days, and a friction rub was heard on three occasions. Physical examination on March 8 revealed slight but definite tenderness on the lateral aspect of the left calf, and dicumarol was started. An effective hypoprothrombinemia was maintained from March 9 to March 15, but despite the anticoagulant therapy a superficial thrombophlebitis developed in the right antecubital fossa secondary to a venipuncture, and this process spread several centimeters centrally and peripherally during the following two days. The tenderness in the left calf rapidly disappeared, but the antecubital region remained tender and painful for several days. The remainder of the patient's course was uncomplicated and she was discharged well on April 4, 1943.

(d) Cavernous Sinus Thrombosis.—

CASE 4.—W. L., a man, was admitted on May 25 for massive nasal and facial swelling associated with right orbital cellulitis and proptosis, and with thrombosis of the right retinal veins. Blood culture was positive for Staphylococcus aureus, and sulfadiazine was immediately started. The patient's clinical course was downhill, and all observers agreed that he had a right cavernous sinus thrombosis. Dicumarol therapy was instituted and on May 30 an effective level was reached; on that day, for the first time, the patient seemed somewhat improved. He improved rapidly for several days and gradually thereafter; the temperature began to subside on May 30. A therapeutic hypoprothrombinemia was maintained until June 16, and the patient was discharged on June 17 well except for right amblyopia. This course is presented in chart 2.

CASE 5.—J. C., a boy aged 12 years, treated for imminent cavernous sinus thrombosis, was admitted for massive facial swelling and tenderness secondary to pericementitis of a left upper central incisor. There was localized tenderness over the lateral (left) nasal vein. Sulfadiazine was started, and on May 12 the affected tooth was removed; postoperatively dicumarol therapy was begun. No improvement was noted during the following day, but that night (May 13) the desired

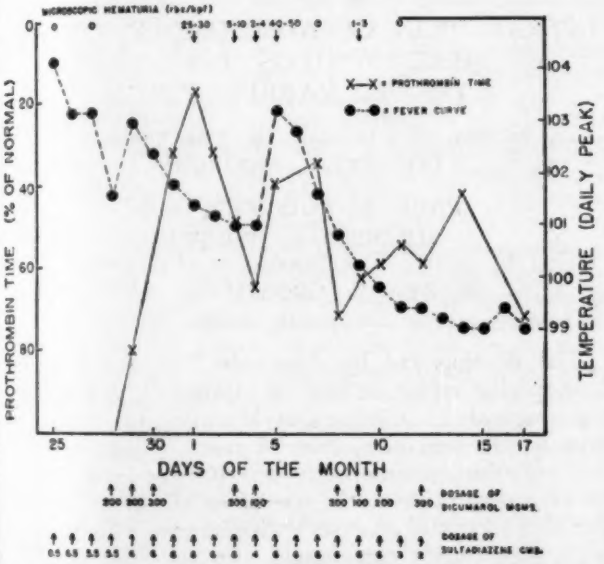


Chart 2 (case 4).—Light solid line, prothrombin time. Broken line with black dots, fever curve.

hypoprothrombinemia was achieved and on the following morning improvement in the facial swelling and tenderness was noted, which continued until the patient was discharged much improved on May 22.

The pain pattern is worth noting; on May 12 the notes state that the patient was "crying, irritable" and the same note is made the following morning; that afternoon he was "crying, depressed," but that night he "seemed more contented" and thereafter each note stated that he was comfortable. Again relief from pain and satisfactory hypoprothrombinemia correlate.

TOXICITY

One of our 18 patients developed a petechial rash on the fifth day of treatment, at which time his prothrombin time had dropped to 18 per cent of normal (considerably lower than our desired range of 30 to 62 per cent). The petechiae were distributed over both shoulders and both flanks. No conjunctival, sublingual or retinal hemorrhages were present, but a Rumpel-Leede test was moderately positive. On the same day 25 to 30 red blood corpuscles per high power field were observed in a centrifuged urine specimen. The rash disappeared over a period of about four days, while the Rumpel-Leede test became negative after three days. Microscopic hematuria continued for eight days, reaching its maximum of 40 to 50 red blood corpuscles per high power field on the fourth day of the episode. The patient had an otherwise uneventful recovery; a more detailed discussion is presented in the report of case 4. Chart 2 shows the prothrombin curve in this case.

None of the remaining patients showed any evidences of macroscopic hemorrhage, although 3 of them had prothrombin times of 22 per cent or less on one or more occasions. It should be noted that this included 11 postoperative patients, none of whom developed hematomas, and 4 postpartum patients, none of whom bled or had abnormal lochia.

Microscopic hematuria was found in 4 cases other than the 1 reported. The prothrombin time was 30 per cent of normal or less in 3 of these at the time when the red cells appeared. In each case the urine quickly cleared. We have excluded from this group 10 patients who showed microscopic hematuria following operations in the genitourinary regions but have included a patient whose urine cleared following supracervical hysterectomy and subsequently showed red cells (thirteenth postoperative day).

Three patients have complained of nausea following a dose of dicumarol. The drug was continued in each case, and in none did the nausea recur. Despite a careful search, no other possible evidences of dicumarol toxicity were found; there was no suspicion of liver damage and no evidence of embolization. The danger of hemorrhage following venipuncture has been mentioned by others;[8] I have seen no instances of this complication, although the only precaution has been the use of a fine (23 or 24 gage) needle.

COMMENT

Dicumarol has been criticized from the point of view of difficulty of control.[9] My experience confirms the difficulty of ideal control, but I feel that the majority of patients can be maintained within desired prothrombin time limits if the frequency and size of follow-up doses is modified according to the slope of the prothrombin curve and the response to the initial three doses, as well as according to the absolute level. With such a program the few patients who escape from control will be suffering from underdosage rather than overdosage, and toxic manifestations (hemorrhage) will be unlikely.

Critics have stressed the danger of hemorrhage with dicumarol therapy[10] and have suggested the possibility of other toxicity.[3] To date no clinical or experimental evidence in the literature has shown toxicity other than hemorrhage; my experiences are in agreement with this fact. In this small series no hematomas or hemorrhages were observed; 1 patient had a mild transient purpura, and 4 other patients showed transient microscopic hematuria. I feel that chance may in part account for the absence of hemorrhage in this series but suggest that the method of dosage may be in part responsible. The lack of significant toxicity under proper control is in agreement with the impression of Wright[10a] that dicumarol may be safer for general use than heparin.

9. Davidson, C. S., and McDonald, H.: A Critical Study of the Action of 3,3'-Methylene-Bis-(4-Hydroxycoumarin) (Dicoumarin), Am. J. M. Sc. **205**: 24-33, 1943.

10. Cahan, A.: Hemorrhage and Purpura Caused by Dicoumarin, New England J. Med. **228**: 820-822, 1943. DeBakey.[3] Conference on Therapy.[5]

10a. Wright, I. S.: Thrombosis: Modern Concepts of Cardiovascular Disease, published by American Heart Association **12**, No. 4, 1943.

The results of treatment with dicumarol, as with any new drug, are difficult to assay. I was impressed with the rapid recovery and short convalescence of 8 of the patients treated for thrombophlebitis; dicumarol may well have expedited their recovery. In addition, the disappearance of pain in 7 of these patients and in 2 from other groups seemed to parallel the achievement of therapeutic levels of hypoprothrombinemia. I have found no other mention of this phenomenon in the literature. If the disappearance of pain in thrombophlebitis were due to hypoprothrombinemia, one might postulate that the pain was secondary to the venospasm resulting from the propagation of a thrombus; when the propagation has been stopped the pain disappears.

The prophylactic results, the results in cavernous sinus thrombosis and in threatened cavernous sinus thrombosis and the results in 2 cases of pulmonary embolism are interesting, but no further comment seems justified in such a small series. The excellent results reported from the Mayo Clinic [4] are of particular importance in the last regard.

Of considerable theoretical interest was the development of thrombophlebitis in 1 of the patients while under adequate dicumarol therapy (patient 3). This raises the question as to whether dicumarol hypoprothrombinemia of the magnitude produced in this series is sufficient to inhibit intravascular clotting. Although the experiments of Bollman and Preston,[5] Dale and Jaques [11] and Richards and Cortell [12] demonstrate inhibition of clotting in the presence of dicumarol hypoprothrombinemia, these experimental results do not seem comparable to human conditions because of the severity of the hypoprothrombinemia induced in most experiments and because of the relatively drastic alterations in the condition of the vessel walls. Davidson and McDonald [9] felt that massive and dangerous dosage was necessary to produce adequate changes in coagulability, but in my opinion their experiences with the coagulation time in lusteroid tubes does not necessarily lead to this conclusion. In any event the available experimental evidence is inadequate to determine whether dicumarol, in the stated range, is able to prevent thrombosis in human veins under conditions of stasis and clot propagation. I believe that dicumarol is effective and that the development of thrombophlebitis in the case under discussion illustrates a safety factor in its use. It is hypothesized that hypoprothrombinemia in the 60 to 30 per cent range is sufficient to inhibit purely venostatic coagulation, whereas coagulation of the hemostatic type associated with the local accumulation of thrombokinase may occur.

CONCLUSIONS AND SUMMARY

1. Dicumarol was administered orally to 18 patients with various indications. All the patients had uncomplicated recoveries; this includes 1 case of cavernous sinus thrombosis.

2. One patient had a transient purpura, and 4 other patients had transient microscopic hematuria. No other evidences of hemorrhage were observed although 11 postoperative and 4 postpartum patients were treated. No evidence of toxicity other than hemorrhage was observed.

3. Control of the prothrombin level during dicumarol therapy is not easy, but the method of dosage which I have used has proved generally effective and invariably safe in a small series.

4. Dicumarol seems to have a beneficial effect in cases of thrombosis and embolism. No more definite statement can be made until many more cases have been reported. In this series the disappearance of pain and the achievement of hypoprothrombinemia showed a striking relationship.

5. Dicumarol cannot, in my opinion, replace heparin in emergencies demanding anticoagulant therapy, nor should it be used as an alternative to indicated surgical procedures.

6. The cheapness of dicumarol, its ease of administration, its apparent margin of safety and its possible efficacy in thrombotic diseases warrant further controlled clinical trials of the drug. I feel that the ultimate field of usefulness of dicumarol will principally be in the prophylaxis of thrombosis and embolism and in the treatment of thrombophlebitis.

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INTRAMUSCULAR ADMINISTRATION OF ANTI-HAEMOPHILUS INFLUENZAE, TYPE B, RABBIT SERUM

A REPORT OF ITS USE IN THREE CASES OF INFLUENZAL MENINGITIS

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The development by Alexander [1] of a therapeutic type-specific rabbit serum has dramatically influenced the prognosis in infections by Haemophilus influenzae, type b. In our own series of cases of meningitis by this organism, the mortality was 100 per cent (11 out of 11 cases) prior to the use of rabbit serum, and 15 per cent (4 out of 26 cases) with its use in conjunction with sulfonamide compounds. In the past we have administered the serum intravenously or both intravenously and intrathecally as recommended by Alexander.[2] Recently 3 babies with meningitis due to H. influenzae, type b, were admitted to the pediatric isolation wards of the New Haven Hospital and afforded an opportunity for the determination of the effectiveness of the serum when administered intramuscularly.

REPORT OF CASES

CASE 1.—G. K., a boy aged 18 months, was admitted with a history of a "cold" with nasal discharge for one week. During the day before admission he seemed drowsy and in the evening vomited twice. The following morning his temperature was 104 F. By noon the temperature had risen to 106 F. and the family physician noted that the baby's neck was stiff. Hospitalization was advised.

Aided by a grant from the Fluid Research Fund of the Yale University School of Medicine.

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On admission to the New Haven Hospital the patient's temperature was 104.8 F.; he was pale, acutely ill, irritable and restless but clear mentally. There was a moderate amount of nasal discharge, and the throat was injected. Both membranae tympani were dull and inflamed. The neck was stiff. Lumbar puncture revealed an initial spinal fluid pressure of 350 mm.

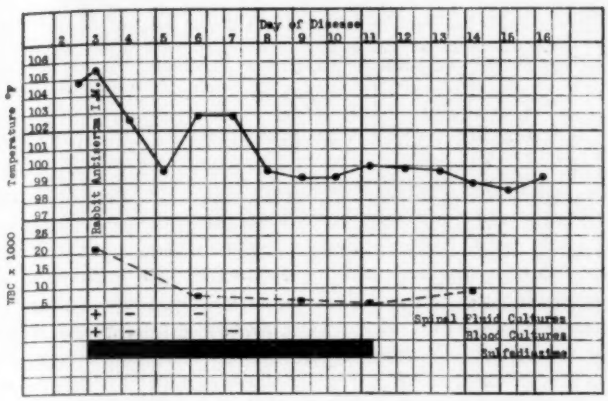

Chart 1 (case 1).—H. Influenzae, type b, meningitis and bacteremia.

The fluid was cloudy and contained 5,200 white blood cells per cubic millimeter, of which 98 per cent were polymorphonuclear leukocytes. Stained smear showed numerous gram-negative, pleomorphic bacilli which were identified by the Neufeld technic of capsular swelling as type b influenzal organisms. Sulfadiazine was administered by mouth in a dosage of 1½ grains (0.1 Gm.) per pound of body weight daily. The contents of three vials of anti-H. influenzae type b rabbit serum, totaling 75 mg. of antibody nitrogen, were injected intramuscularly after negative ophthalmic and cutaneous tests for sensitivity. The baby's temperature returned to normal by the fourth day of hospitalization. On the fifth hospital day his temperature rose to 102.9 F. An excess of free antibody was present, as demonstrated by capsular swelling of the infecting strain of type b influenzal bacillus by the patient's blood serum in a 1 : 10 dilution. This indicated that an adequate amount of serum had been injected. Fever persisted and a right myringotomy was performed on the following day, although there was no local evidence that an otitis media of a purulent nature was present. Pus was not obtained, and a culture of the auditory canal was

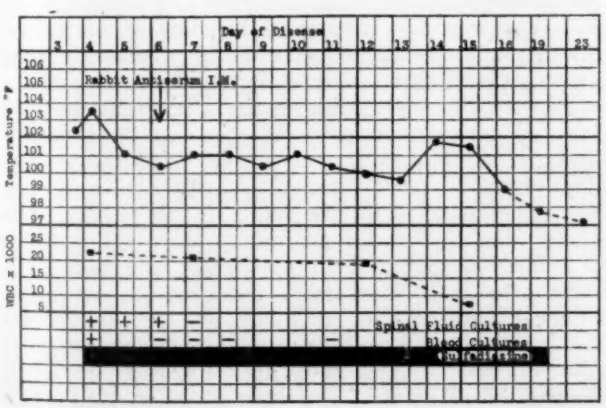

Chart 2 (case 2).—H. Influenzae, type b, meningitis and bacteremia.

negative for the type b influenzal bacillus. The baby's temperature dropped rapidly to normal and convalescence was uncomplicated.

Admission nasal, pharyngeal, spinal fluid and blood cultures were positive for H. influenzae, type b. The spinal fluid sugar prior to treatment was 68 mg. per hundred cubic centimeters. The white blood cell count was 20,500, of which 87 per cent were polymorphonuclear leukocytes. Blood sulfadiazine levels ranged from 9 to 12.9 mg. per hundred cubic centimeters.

An excess of free antibody was demonstrated in the patient's blood eight hours after the injection of rabbit serum and persisted for a period of at least four days as determined by daily tests.

CASE 2.—B. F., a boy aged 20 months, was admitted to the New Haven Hospital with a history of fever up to 105 F. for three days. There were no other signs except anorexia. On the morning of admission he vomited once and appeared drowsy. He was brought to the hospital in the late evening after the occurrence of a generalized convulsion.

The patient's temperature was 102.4 F., the lips were cyanotic and the skin was mottled. Follicular tonsillitis was present. There were occasional convulsive movements of the extremities, and the neck was stiff. Lumbar puncture revealed an initial spinal fluid pressure of 350 mm. The fluid was cloudy and contained 19,000 white blood cells per cubic millimeter, of which 95 per cent were polymorphonuclear leukocytes. Stained smear showed numerous gram-negative pleomorphic bacilli, which were identified as type b influenzal bacilli. Sodium sulfadiazine was administered by infusion and clysis and on the third hospital day was replaced by sulfadiazine orally. The baby's temperature fell to a lower level, but he remained severely ill and influenza bacilli persisted in the spinal fluid. Anti-H. influenzae, type b, rabbit serum containing 75 mg. of antibody nitrogen was injected intramuscularly on the fourth hospital day after ophthalmic and cutaneous tests for sensitivity were found to be

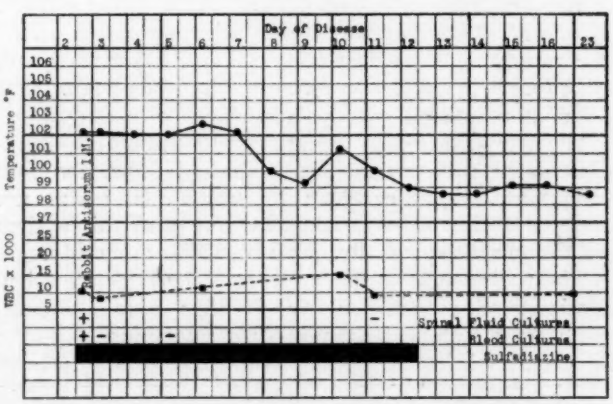

Chart 3 (case 3).—H. influenzae, type b, meningitis and bacteremia.

negative. Fever persisted for the first thirteen days of hospitalization, but there were no complications.

Admission nasal, pharyngeal, spinal fluid and blood cultures were positive for H. influenzae, type b. The spinal fluid sugar before treatment was 33 mg. per hundred cubic centimeters. The white blood cell count was 22,800, of which 87 per cent were polymorphonuclear leukocytes. Blood sulfadiazine levels varied from 12 to 23.6 mg. per hundred cubic centimeters.

An excess of free antibody was demonstrated in the baby's blood twelve hours after the injection of rabbit serum and persisted for a period of at least six days.

CASE 3.—D. M., a boy aged 14 months, was admitted to the New Haven Hospital with a history of fever, anorexia and vomiting beginning on the preceding day. During the night he was restless. On the morning of admission he was examined by the family physician, who noted stiffness of the baby's neck and advised hospitalization. There was a history of a "cold" three weeks previously, which lasted for about ten days.

The patient's temperature was 102.2 F. He appeared acutely ill and was moderately dehydrated. The neck and back were rigid. There were no signs of an upper respiratory infection. Lumbar puncture yielded cloudy spinal fluid, which contained 13,700 white blood cells, all polymorphonuclear leukocytes, and numerous type b influenzal bacilli. One infusion of sodium sulfadiazine was administered; subsequent chemotherapy consisted of sulfadiazine orally. Anti-H. influenzae, type b, rabbit serum containing 75 mg. of antibody nitrogen was injected intramuscularly after sensitivity tests were found to be negative.

The baby's temperature dropped toward normal on the seventh hospital day, and convalescence was uncomplicated except for a transient fever on the ninth day.

Admission nasal, spinal fluid and blood cultures were positive for H. influenzae, type b. The spinal fluid sugar before treatment was 16 mg. per hundred cubic centimeters. The white blood cell count was 10,450, of which 69 per cent were polymorphonuclear leukocytes. Blood sulfadiazine levels varied from 4.5 to 13.1 mg. per hundred cubic centimeters.

An excess of free antibody was demonstrated in the patient's blood one hour after the injection of rabbit serum and persisted for a period of at least eight days.

SUMMARY AND CONCLUSIONS

Anti-H. influenzae, type b, rabbit serum was administered intramuscularly to 3 babies with meningitis and bacteremia. Chemotherapy consisted of sulfadiazine. An excess of free antibody was demonstrated in the blood of two patients eight and twelve hours respectively after intramuscular administration of the therapeutic serum and was known to persist for a period of four and six days respectively. The exact time of appearance and disappearance of free antibody is not known, since earlier and subsequent tests for its presence were not made. With the third patient, an excess of free antibody was demonstrated in the blood as early as one hour after intramuscular injection of the serum and persisted for at least eight days. Antibody was not present prior to the administration of serum. The 3 babies recovered without sequelae.

We felt justified in administering the serum intramuscularly rather than intravenously, since the first baby was treated early in the disease and was not desperately ill. The satisfactory course of this patient led to the subsequent use of serum intramuscularly.

The therapeutic serum appears to be effective when administered intramuscularly. Under certain circumstances the technical advantages of intramuscular over intravenous injection of the serum may be significant.[3]

3. Since this report was written, 2 additional babies have been treated with serum intramuscularly. One, aged 10 months, with laryngitis and bacteremia, recovered without complications; the other, aged 3 months, with meningitis and bacteremia, died. An excess of free antibody was present in the blood five hours and one hour respectively after the administration of serum and was known to persist for nine and sixteen days respectively.

Pericardial Pain.—Exploration of the pericardial sac presented many difficulties. Only patients with a large pericardial effusion were suitable for this method of investigation. After outlining the sac by x-ray, the trocar was inserted first through the intercostal space, then through the pericardial sac, noting the presence or absence of pain during the procedure. Once within the sac, the silver wire was introduced and the point brought in contact with the serous surface of the pericardium by scratching and by pressure. The following observations were noted in these experiments: 1. Paracentesis of the pericardium at the level of the fifth and sixth interspace near the mammary line elicited pain in the neck, sharp and restricted to a point over the trapezius ridge. Penetration of the pericardium at high levels failed to produce pain. This pain was similar to that previously described from irritation of the central portion of the diaphragmatic pleura. So we are entitled to assume that the phrenic nerve endings are reflected over the lower portion of the fibrous pericardium. 2. Scratching or pressure of the wire on the heart itself produced no pain, although a peculiar feeling of distress and apprehension was induced by "tripping" the apex with the wire. 3. The inner surface or serous layer of the pericardium gave no pain response to irritation.—Capps, Joseph A.: Pain from the Pleura and Pericardium, Research Publications, Association for Research in Nervous and Mental Disease, Baltimore, Williams & Wilkins Company, 1943.

DERMATITIS CAUSED BY VARIOUS REPRESENTATIVES OF THE ANACARDIACEAE

IN TROPICAL COUNTRIES

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Two short papers that appeared in THE JOURNAL Sept. 4, 1943 inspired me to prepare this paper. One of these was entitled "Dhobie Mark Dermatitis" and the other "Dermatitis from Semecarpus Anacardium."[1] In the first paper, 52 cases were reported in which dermatitis resulted among American soldiers serving in India; articles of clothing worn by them had been marked with the juice of the marking nut, Semecarpus anacardium. In the second paper there was a report of 16 persons who were affected out of 50 who were exposed in sorting mail in Washington, D. C., that had been contaminated by a partly opened bottle of bhilawanol oil (marking nut oil) that happened to be included in the same sack of mail. In practice in India the oil of the marking nut, mixed with lime water or alum, is used by the native laundrymen as a marking ink for articles of clothing; it is insoluble in water and hence distinctly permanent. The somewhat caustic juice from the fruit walls of the common and widely known cashew nut (Anacardium occidentale) is similarly used. In the case of the latter species, when cooking the nuts by boiling or by roasting, one is warned not to stand where the steam or the smoke will come in contact with one's person. It is a well known fact that persons susceptible to Rhus dermatitis are frequently poisoned by merely standing in the smoke of bonfires in which parts of poison oak or poison ivy plants are being burned, and this applies also to the steam or smoke when cashew nuts are boiled or roasted.

My object in this paper is to record the fact for the benefit of medical men assigned to positions in the Old World tropics that in most parts of the region certain plant species do occur that, on contact, cause a distinct and often severe dermatitis corresponding exactly to Rhus dermatitis in the United States. All these deleterious species belong in the same natural family as do our poisonous species of Rhus (poison oak, poison ivy, poison sumac), the Anacardiaceae, and the active principle is the same in all cases. It is evident that as the war progresses there will be cases of dermatitis observed in the active and potentially active areas. It is scarcely necessary to prepare a botanical treatment of this subject, for one simply cannot educate all members of the armed services called on to operate in the forests and jungles to recognize at sight the relatively few poisonous plant species that may be encountered. After all, in practice it will be found that cases of dermatitis will occur chiefly among those men who fell certain types of trees and who inadvertently smear themselves more or less with an

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innocent looking sap of these trees. The point that needs repetition is that the average physician working with our troops may expect, on occasion, to encounter mild to rather severe cases of dermatitis caused by the victims coming in contact with certain trees or shrubs, and in such cases the indicated treatment is exactly the same as that used for ordinary Rhus dermatitis at home.

The Anacardiaceae are a family of woody plants of worldwide distribution, chiefly trees, but including some shrubs and vines. It is rather a striking fact that frequently species of this family that are contact poisons produce fruits that at maturity may be eaten with entire safety. Actually in the Old World tropics certain definitely poisonous species of Mangifera (mango) are widely cultivated for their edible fruits. The genera involved are Rhus, including its segregate toxicodendron, with perhaps 200 species, fortunately few of them actually poisonous (those in the toxicodendron group only), and confined to certain parts of North America, Japan and China, Anacardium with fifteen species, tropical America, one (Anacardium occidentale), the common cashew nut, introduced and abundant in the Old World tropics, Gluta, fifteen species, Swintonia, sixteen species, Melanorrhoea, eighteen species, Melanochyla, thirteen species, Semecarpus, ninety species, Campnosperma, twelve species, and Mangifera, sixty species, all these genera characteristic of the Indo-Malaysian region; and Metopium, two species, Comocladia, thirty-five species, Lithraea, six species and Pseudosmodingium, four species, all characteristic of tropical America. They are found chiefly in forested areas, but some grow in thickets and in fence rows. Many of them are fortunately by no means common, and, generally speaking, it is only a few species of any particular genus, such as Mangifera, Semecarpus and Rhus, that are actually poisonous.

There is, of course, a great variation in susceptibility in different persons, some being highly allergic, others being relatively immune to the poisonous principle. Curiously, the mature fruits of even the poisonous species of Mangifera, Semecarpus and Anacardium may be eaten with impunity, while the seeds of Gluta may be eaten with entire safety after cooking. In this family are a considerable number of genera which contain species widely cultivated for their edible fruits in various tropical countries, including representatives of Spondias, Dracontomelon, Pleiogynium, Odina, Pistacia, Cyrtocarpa, Lannea and Harphyllum. None of these are contact poisons.

These contact poison plants belonging in often very dissimilar genera are so well known to the natives familiar with the forest that in British Malaya, for example, the various species of such strikingly dissimilar genera as Gluta, Melanochyla, Melanorrhoea, Semecarpus and Swintonia are collectively known as rengas, cognate forms of this word in Java being ingas and in the Philippines (for Semecarpus species) ligas.

In general the various representatives of the Anacardiaceae have a more or less resinous sap which is sometimes slightly milky and which on exposure to the air soon becomes brown or black. The sap of some species of Rhus, Gluta and Melanorrhoea is the basis of certain types of lacquer widely utilized in the Old World. It is reported that workers in the lacquer industry develop a very high degree of immunity to what may be designated as anacardiaceous dermatitis. It is this sap that carries the poisonous properties of the various species, and it occurs, of course, in greater or less abundance in all parts of the plant. This sap is never irritating on contact, the characteristic dermatitis not developing for some time after a person has come in contact with the plant or its juice. Yet such is the variation in immunity that highly allergic persons coming in contact even with old lacquered furniture may on occasion develop the dermatitis characteristic of Rhus poisoning. In the case of the common mango, while most persons can safely eat this magnificent fruit in quantity, occasionally persons will be found who will at once develop a characteristic mango rash on eating even a small amount of the fruit.

Instances have been reported of persons developing a characteristic dermatitis after having stood under some of these tree species during showers, and others by their merely coming in contact with the fresh leaves. Generally, however, dermatitis occurs only when one comes in contact with the plant sap, either fresh or old. Some of the species actually yield important commercial timbers, but difficulties are often encountered by persons handling the lumber, often long after the trees may have been felled. This for the reason that the sap may retain its highly irritant qualities for a long time, quite as in the case of the marking nut, when dermatitis occurred even after clothing marked with its oil had been laundered. In 1 case reported to me in Manila from Boston many years ago a carpenter working with imported lumber developed a very severe dermatitis and an examination of the wood showed that it was the Malayan *rengas* (Gluta), logs of which are sometimes exported, for it is a good cabinet timber.

The famous tropical fruit the mango (Mangifera indica) is normally innocuous, but this cannot be said regarding certain wild species of Mangifera characteristic of the Indo-Malaysian region, some of which are also cultivated about houses and in orchards for their edible fruit. With representatives of this genus it is the sap that should be avoided, one author intimately familiar with the vegetation of the Malay Peninsula stating "Our advice is always to treat respectfully Mango-like trees which smell of turpentine." The *binjai* or *uani* (Mangifera caesia), the *lanjut* (Mangifera lagenifera), the *bachang* (Mangifera foetida) and *kwini* (Mangifera odorata) are all contact poisons, yet in the Malayan region all are cultivated for their edible fruits. Of these the *lanjut* and the *binjai* are the most poisonous; even the vapor from freshly bruised tissues, the smoke from a bonfire of their leaves and branchlets, or raindrops falling through the crown of the tree may affect the skin. All the Mangifera species are large trees, and most of the species, other than the few cultivated ones, occur only in forested regions as widely scattered individuals. They are mostly Malayan, some extending northward to Burma, Siam and Indo-China.

The generally accepted idea is that the poisonous principle characteristic of certain genera and species of the Anacardiaceae is a very permanent nonvolatile oil, which on contact with the skin causes the characteristic dermatitis familiar to all physicians who have had occasion to treat cases of Rhus poisoning. It may safely be assumed that the poisonous principle, whatever it is, is the same for all representatives of the various genera listed, and in cases of dermatitis simulating that caused by our common poison ivy and poison oak or poison sumac, the indicated treatment is exactly that which the physician would use in any part of the United States for Rhus dermatitis. One can

scarcely escape the conclusion, from what has already been reported, that American troops serving in almost any part of the Indo-Malaysian region may come in contact with some of these poisonous species, and the probability is that physicians serving with the troops will have, on occasion, to treat cases of more or less severe dermatitis which will remind him of Rhus dermatitis with which he is familiar at home.

While there are plants in the tropics in other families than the Anacardiaceae that may cause dermatitis, I know of none in which the active principle is the same as that characteristic of the Anacardiaceae. Certain species of the Euphorbiaceae, with milky sap, may and do cause severe dermatitis, but this is caused by contact with the milky juice with which the growing parts of these plants are charged, an excellent example being the tropical American manchineel (Hippomane mancinella). In other representatives of this family difficulties may be encountered only when the milky sap comes in contact with mucous membranes, such as those about the eye; some of these euphorbiaceous plants are even reputed to cause such severe conjunctivitis that blindness may follow.

Aside from these contact poisons there is little to fear in the tropical jungles. Certain species of Jatropha in tropical America and representatives of a few other genera have intensely irritating stinging hairs, and this is also true of the numerous Old World species of the tree nettle (Laportea), shrubs and small trees, first cousins to the common nettle but much more vicious. Contact with these shrubs or small trees causes an immediate sensation similar to that which one feels on touching red hot iron, and this intense pain is almost immediately followed by extensive water blisters, which continue to form for some time following exposure. The irritating principle in the case of the tree nettles is apparently formic acid, and the indicated treatment is to bathe the affected parts thoroughly with an alkaline solution.

Purely mechanical are the stinging hairs found on the pods and certain floral parts of the cowhage (Mucuna), and representatives of this genus occur in both hemispheres. Apparently in the case of the cowhage the resulting pain is due wholly to the mechanical effect of the very stiff, needle shaped stinging hairs. In India, and perhaps in other parts of the world as well, these stinging cowhage hairs, mixed with molasses as a carrier, are used as a remedy for tapeworm, the mixture being swallowed, the soft tissues of the tapeworm attracting the stinging hairs with apparently fatal affect to the tapeworm.

As with Rhus, contact with the poisonous plants briefly discussed will yield varying results. Highly allergic persons may be very severely affected, while immune or partly immune ones are affected slightly or not at all. On the basis of my own wide personal experience in the forests and jungles of the Old World, covering a period of twenty-two years, I was never affected by any of these reputedly poisonous species, although many times I have handled fresh branches over and over again in the course of preparing botanical material; and in the same period none of my numerous associates ever reported cases of contact poisoning. I speak as a field botanist rather than as a physician. On the whole I suspect that it will be only on rare occasions that cases of anacardiaceous dermatitis will be noticed. If such cases do show up, then apply the same treatment that one would use for Rhus dermatitis at home.

THE CORNELL SELECTEE INDEX

A METHOD FOR QUICK TESTING OF SELECTEES FOR THE ARMED FORCES

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BACKGROUND AND LITERATURE

That each person with a neuropsychiatric disorder revealed subsequent to induction costs the government $30,000 to $35,000, that twenty-seven hospitals with a capacity for 33,000 patients are devoted to the care of veterans from the first world war with neuropsychiatric disorders, that approximately a billion dollars has been spent on the care of these patients and that 60 per cent of all ex-members of military services requiring hospitalization are admitted for neuropsychiatric disabilities are facts which have been repeatedly presented in the literature.

As the result of the work of neuropsychiatric examination boards in the United States, the American Expeditionary Force of World War I had a far smaller percentage of nervous and mental casualties than did the armies of our allies. Even so, 110,137 neuropsychiatric casualties occurred in the Army from April 1, 1917 to Dec. 31, 1919 at a rate of 26 per thousand. It has been estimated, furthermore, that had it not been for the psychiatric selection process 40,000 more casualties of this type would have occurred in our forces. No small wonder that the editors of the volume on neuropsychiatry of the History of the Medical Department of the United States Army of World War I should express the belief that it would have been advisable to reject totally all mentally unfit individuals at the draft boards rather than to have selected some of them for full or even limited military service.

Since the same problems still exist, methods that attempt to refine the selective process are being studied or devised. In his comprehensive treatise, Miller and his collaborators [1] point out that "men who are liable to breakdown can frequently be detected during enlistment. . . . Since the treatment of psychological disorders, as compared with others, tends to be disproportionately costly and difficult, prophylaxis is correspondingly important."

Rosenberg and Lambert,[2] in a review of 200 consecutive case histories of soldiers discharged from the Army at Camp Lee, Virginia, because of neuropsychiatric disabilities, found that 83 per cent had had symptoms before induction. It was concluded that "the majority of the psychiatric casualties we encountered could have been eliminated at the induction board if relatively simple social service data had been available." Bowman [3] sug-

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This study was aided by a grant from the Josiah Macy Jr. Foundation.

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gested the use of the files of hospitals and courts, social service and school records by local draft boards in order to weed out unsuitable persons and to facilitate the work of the examining neuropsychiatrist. Other suggestions have been offered by Menninger and Greenwood,[4] who felt that the work of the induction board psychiatrist was highly unsatisfactory since a reliable diagnosis could not be arrived at in three or four minutes. This was even more difficult because of the fact that the pertinent historical information was lacking.

Even with the assistance of supplemental technics, von Storch and his associates [5] felt that it was impossible for one neuropsychiatrist to examine more than 50 recruits in one day and do an adequate job of it. It was their experience that no one neuropsychiatrist can do justice to more than 10 men per hour. The practice of alloting 50 selectees to one psychiatrist has been adopted at the Boston induction station, as was suggested by Bloomberg and Hyde.[6]

One type of selection is best exemplified by the method used at the Naval Training Station at Newport, R. I. Here the candidate is examined while he is naked, after he has been standing from three quarters to one hour for his physical examination. From a naval neuropsychiatric point of view this is an ideal time to examine the recruit, since he is physically and emotionally fatigued. Wittson and his associates,[7] who have been using this method, find that of all men suspected at this initial examination one third are ultimately discharged.

It has been noted that in various Armed Forces Induction stations in the East (e. g. New York, Boston and Atlanta, and Fort Benning for Negro recruits) questionnaires of a neuropsychiatric nature are used. A statistically standardized procedure of broad and searching quality would be of inestimable value in preventing the induction of those who might not only destroy the morale of the fighting forces but may also do irreparable damage to themselves. This examination must pick out the obviously mentally disturbed and also those whose disability is subtly hidden or potential.

Porter [8] suggests a list of fifteen basic personal attributes for inquiry which should enable one to prognosticate a breakdown under stress.

Flicker [9] shows appreciation of the varied phases of the problem when he suggests that (1) something should be done in the matter of obtaining a psychiatric history, (2) 50 men to every neuropsychiatrist should be the case load for one day and (3) "a definite minimum neuropsychiatric blank be supplied, along the lines suggested by Aita, and that it be mandatory that this be completely filled out."

It becomes apparent from the consideration of the foregoing that it would be desirable to have a method which would attain uniformity, simplicity and objectivity, not to replace the intuition and experience of the neuropsychiatrist, but to supplement and improve his effectiveness. With this aim the Selectee Index was formulated.

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AIM

The vast majority of persons who show evidence of difficulty in adjustment or "break down" under the circumstances of civil life can be expected to "break" under the circumstances of military life. Hence a procedure which would "screen" out the borderline and proved inadequates before induction would lessen the incidence of illness in the armed forces. To detect such persons is desirable because neuropsychiatric and psychosomatic disorders have become important military problems. Furthermore, because of a paucity of neuropsychiatrists, devices that are time and energy saving are essential.

The purpose of the Selectee Index is to furnish a quick and reliable means of detecting individuals who are likely to develop psychoneuroses and psychosomatic disturbances, especially peptic ulcer and allied syndromes. Although designed primarily for evaluation of selectees at induction stations, it may be employed in preinduction examination at Selective Service local boards as well as in replacement centers and in military hospitals.

METHOD

Numerous experiments involving test procedures, both standard and of our own devising, were carried out on a variety of groups of subjects (patients with peptic ulcer, anxiety states, other psychoneurotic states, psychotics, ambulatory hospital patients recovering from upper respiratory infections, medical students and selectees). As the result of these experiments an index was devised based on the results of three tests indicating the subject's neurotic and other abnormal reaction patterns as well as his self confidence, range of interests, decisiveness and the presence of sexual abnormalities.

These tests are self administered and may be given to individuals or to groups of persons. The tests require fifteen minutes to complete and may be scored in two minutes by any one with high school education. The method of scoring may be learned in less than one hour. The equipment for scoring the tests consists of three stencils, a table of equivalent weighted scores and a one page manual of instructions.

The first test presents an opportunity for occupational choice, designed to reveal the subject's range of interest, his work preferences and his acceptance of the male pattern. He is asked to indicate in a list of occupations those which he likes or dislikes. A previous study of homosexuals incarcerated at Rikers Island for asocial behavior, as well as other effeminate and homosexual subjects, demonstrated in a statistically reliable manner that certain occupations, e. g. interior decorator, dancer, window dresser, were chosen by these homosexuals with great frequency. This fact is utilized for the purpose of drawing conclusions concerning the individual's ability to accept the male pattern of our society.

The second test presents evidence of the subject's self evaluation. The subject indicates whether he believes that he would be "good," "poor" or is "in doubt" of his ability to manage specific situations. This test indicates the amount of self confidence, self esteem and decisiveness.

The third test, a questionnaire, consists of a neuropsychiatric and psychosomatic inventory of symptoms which are evidences of maladjustment. The questions in the inventory are of two types. Every fifth question and the last six, so placed for quick discernibility, are of a crucial nature, e. g. "15. Did you ever have a fit or convulsion?" These are called "stop questions," because

any selectee who exhibits such a major symptom must be stopped for more intensive appraisal. The others have less serious implications, such as "11. Are you easily discouraged?" In scoring the index it is this third test which contributes most to the total score and to the "screening" process.

It is worthy of emphasis that each item in the index was incorporated only after having been exposed to item analysis and statistical validation.

For comparison and evaluation, the tests were given to a group of selectees in an experiment arranged by the New York City Selective Service authorities. Each subject was interviewed for fifteen minutes by a leading civilian neuropsychiatrist who had a good appreciation of the requirements for army life. Moreover, these neuropsychiatrists had been given an outline describing an interview procedure designed to aid in detecting important symptoms and to give a degree of uniformity to the interviews.

Similar experiments were carried out at New York and Boston induction stations where the index was used in conjunction with the routine neuropsychiatric interview.

TABLE 1.—*Incidence of Each "Stop Question" Among the General Selectee Population, Those Accepted or Rejected by the Interview Method in New York and Boston, and Those Discharged by the Army and Navy Because of Performance and Neuropsychiatric Disability.*

"Stop Question"		General Selectee Population	Accepted by Interview Method at Induction	Rejected by Interview Method at Induction	Discharged by Army and Navy Because of Performance and Neuropsychiatric Disability
		1,000 cases %	887 cases %	113 cases %	282 cases %
Alcohol	no. 5	0.7	0.1	5.7	10.4
Headache	10	8.7	5.3	35.4	48.7
Fits	15	1.8	0.8	9.7	18.0
Drug addiction	20	0.8	0.7	1.4	3.8
Work record	25	7.2	6.7	11.0	11.1
Stomach	30	7.5	5.9	20.4	19.3
Hematemesis	35	2.6	1.6	10.7	14.8
Enuresis	40	3.0	0.8	11.0	7.3
Mental hospital	45	0.7	0.2	4.4	11.7
Sleep walking	50	1.0	0.0	4.4	5.5
Diarrhea	55	2.1	1.4	8.0	9.3
Nervous breakdown	59	0.7	0.2	4.4	33.9
"Ulcer"	60	0.4	0.2	1.4	8.3

The tests were also given to Army and Navy personnel about to be discharged for neuropsychiatric disorders. Here, test results were compared with actual military performance and the information acquired through intensive study at military hospitals.

RESULTS

A comparison of these groups with a normal population in regard to incidence of "stop questions" is shown in table 1.[10] For example, less than 1 per cent of the normal and accepted groups suffer from alcoholism, while 5 to 10 per cent of the rejected and discharged groups do. Table 2 shows the frequency of "stop questions" for these groups. For example, 20 to 25 per cent of the normal and accepted groups have one or more "stop questions," while 70 to 83 per cent of the rejected and discharged men admit these significant symptoms. Table 3 shows the distribution of "weighted scores" [11] for these groups. It should be noted that the mean and standard deviation of the rejected group is considerably lower than that for the general selectee population and that the critical ratios between the groups compared are in all cases statistically significant. The effect of age on "weighted score" was studied, and it was found that the mean for a specific age varied but slightly from the mean of the group.

TABLE 2.—*Number of "Stop Questions" Among the General Selectee Population, Those Accepted or Rejected by the Interview Method and Those Discharged by the Army and Navy Because of Performance and Neuropsychiatric Disability.*

Total Number of "Stop Questions"	General Selectee Population	Accepted by Interview Method at Induction	Rejected by Interview Method at Induction	Discharged by Army and Navy Because of Performance and Neuropsychiatric Disability
	1,000 Cases %	887 Cases %	113 Cases %	282 Cases %
0	75.0	80.7	30.0	16.9
1*	17.4	15.6	31.9	29.4
2	5.0	2.8	22.1	24.9
3	1.6	0.6	9.8	15.9
4	0.8	0.2	5.3	5.5
5	0.1	0.1	...	2.4
6	...	...	...	2.4
7	...	...	...	1.7
8	0.1	...	0.8	0.3
9	...	...	...	0.3
10	...	...	...	...

* One or more "stop questions" is the basis for referral for neuropsychiatric appraisal.

The selectee tests have been given to 5,435 persons. Results are presented for 3,955 individuals. Those for the remainder are not presented because the results of the neuropsychiatric interview were not available. Performance results may later become available for this group.

In the following experiments each subject was examined with the index and by a neuropsychiatrist whose opinion was accepted as a basis for comparison.

TABLE 3.—*Distribution, Means, Standard Deviations and Critical Ratios for Weighted Scores Among the General Selectee Population, Those Accepted and Rejected by the Interview Method in New York and Boston, and Those Discharged by the Army and Navy Because of Performance and Neuropsychiatric Disability*

Weighted Score	General Selectee Population	Accepted by Interview Method at Induction	Rejected by Interview Method at Induction	Discharged by Army and Navy Because of Performance and Neuropsychiatric Disability
	1,000 Cases	887 Cases	113 Cases	282 Cases
57-60	414	392	22	17
53-56	248	231	17	31
49-52	173	154	19	42
45-48	77	64	13	29
41-44*	52	38	14	33
37-40	10	3	7	38
33-36	15	3	12	37
29-32	6	1	5	35
25-28	1	1	0	16
21-24	1	0	1	4
20 and less	3	0	3	0
Mean	53.45	54.30	46.78	42.12
S. D.	6.20	4.92	9.92	9.48
C. R. (diff./S. D. diff.):				
Between 1,000 cases and 282 discharged				4.28
Between 887 accepted and 113 rejected				7.94
Between 887 accepted and 282 discharged				15.63

* Weighted scores of 44 or less are the basis for referral for neuropsychiatric appraisal.

SERIES I

Results are given for 307 selectees from the Greater New York area. Eighty-six per cent of those men rejected by the neuropsychiatrist were also "screened" by the index.

10. In these tables the general selectee population is composed of the group of 887 accepts and 113 rejects.

11. The simple sums arrived at as the first step in scoring are called "raw scores." By means of a statistical analysis these scores are reduced to a scale of evaluation called the "Table of Equivalent Weighted Scores," which gives the "weighted score."

SERIES II

A group of 1,863 selectees from Boston and its environs was examined with the Selectee Index at the Boston induction station. Here 80 per cent of those rejected after neuropsychiatric interview were "screened" by the index.

SERIES III

A group numbering 1,390 was tested at the New York City induction station. Of the 179 men rejected for psychiatric reasons, 158, or 87 per cent, were "screened" by the index.

SERIES IV

Of 210 men discharged from the Army for neuropsychiatric reasons and 72 discharged from the Navy for similar disorders, the index "screened" 90 per cent and 88 per cent respectively.

SERIES V

In a series different from those described, 63 subjects who had already been rejected by neuropsychiatrists attached to Selective Service local boards were reexamined by means of a second neuropsychiatric interview and with the index. Here the index "screened" only those men who had been rejected as the result of the second interview. Thus, 43, or 87 per cent, of the 49 men rejected as the result of the second interview failed to achieve a passing score on the index. In other words, all persons rejected as a result of a failing index score were also rejected as a result of the second neuropsychiatric interview.

SERIES VI

As a further step in this checking process, 50 selectees were given the tests after having been interviewed. In those cases in which the test results disagreed with the findings of the interviewer, the subject was examined again by a second neuropsychiatrist. The second examination differed from the first in that the interviewer had before him the information uncovered by the index to guide him in formulating a final opinion. In 4 cases the added information caused the second interviewer to arrive at an opinion opposite to that of the first.

SERIES VII

To ascertain whether cultural differences in another part of the United States would modify the value of the index, Southern white and Negro selectees were examined in Georgia. The tests were given to 230 Southern white persons at Fort McPherson, the armed forces induction station for Georgia. The index "screened" all of the 27 persons rejected by the interview method. An experiment was arranged at the Fort Benning induction station for Negroes, and the tests were given to 150 subjects. Of the 4 men rejected for neuropsychiatric reasons, the index "screened" 3.

In these experiments a larger number of men failed the index than were ultimately rejected. There is some evidence to indicate that some of the persons who failed the index but were accepted will ultimately prove themselves to be inadequate. The confirmation of this postulation will have to be postponed until data on their performance in the Army are available. Other persons failed the index but were accepted because (*a*) a question had been misunderstood or misevaluated by the subject or (*b*) of defects in the construction of the Selectee Index. About one third of those who failed the index were finally rejected.

Conversely, 10 to 20 per cent of those rejected by the interview method are not "screened" by the index and for substantially the same reasons that have been mentioned. This discrepancy represents 1 to 4 per cent of the general population, as shown in the chart.

TABLE 4.—*Percentage of Neuropsychiatrically Unfit (as Ascertained by Interview Method and Military Performance) "Screened" by the Selectee Index*

Psychiatric and Psychosomatic Disturbances *	New York		Boston		New York		Army		Navy		Total		Per Cent
	IM †	SI ‡	IM	SI	IM	SI	IM	SI	IM	SI	IM	SI	
Psychoneurosis													
Mixed	0	0	127	102	0	0	12	12	10	8	149	122	82
Anxiety	8	8	26	18	0	0	39	36	0	0	73	62	71
Miscellaneous	6	6	28	23	90	79	39	33	11	11	174	152	87
Constitutional psychopathic states	5	4	90	74	40	34	37	29	16	13	188	154	82
Psychotic states													
Dementia praecox	4	2	7	3	11	10	11	10	5	3	38	28	74
Miscellaneous	2	2	1	1	5	5	12	10	3	3	23	21	91
Ulcer	8	7	9	9	8	8	1	1	1	1	27	26	96
Migraine	0	0	5	4	4	4	0	0	3	3	12	11	92
Asthma	1	0	22	21	5	5	1	1	0	0	29	27	93
Arterial hypertension	2	2	17	8	0	0	0	0	0	0	19	10	53
Enuresis	3	2	6	6	3	3	0	0	4	4	16	15	94
"Immaturity"	0	0	7	5	0	0	0	0	11	9	18	14	77
Stuttering and stammering	3	3	0	0	5	3	0	0	0	0	8	6	75
Epilepsy and convulsive disorders	2	2	8	8	7	7	7	7	5	5	29	29	100
Miscellaneous	0	0	8	6	0	0	51	49	3	3	62	58	93

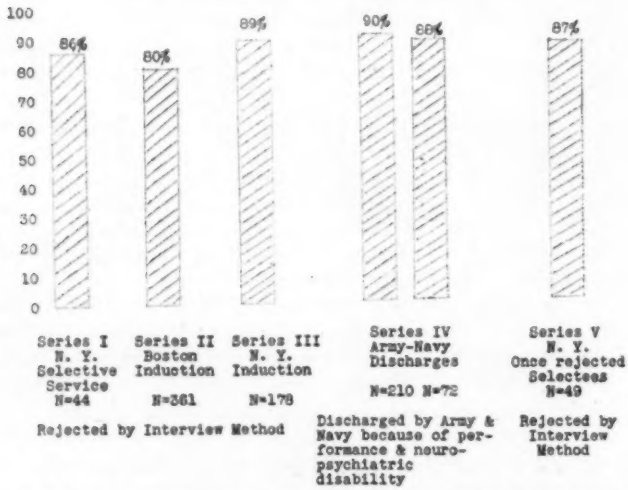
* Classifications as quoted by the various induction stations and military hospitals. † Number of subjects rejected by interview method.
‡ Number "screened" by selectee index.
Unfortunately hypertension was included by some neuropsychiatrists as a neuropsychiatric disability. The justification for such a classification of these patients is lacking.

The equivalent of a seventh grade elementary education is necessary for the adequate understanding of the test items. In the northeastern part of the United States between 5 and 10 per cent of the population has not achieved this educational level and therefore the index is not applicable to this group. In certain parts of the South as high as 70 per cent of the Negro population could not take the index.

RECOMMENDATIONS FOR THE USE OF THE SELECTEE INDEX

Since the index is self administered it might readily be included in the "processing" now in use for the "screening" of selectees. There would be a great advantage in having the index administered at the same stage at which the men are given a preliminary Wassermann test by the Selective Service authorities. It would then become a part of the history sent to the induction station along with the selectee on the day on which he is to be examined. This would present the examining neuropsychiatrist with a picture of the subject's neuropsychiatric state and would enable the physician to arrive at a more accurate and effective decision than at present. The ease with which the index is administered and scored makes it possible to use women, either civilian volunteers or military personnel, in this work.

Should this procedure prove unpractical the Selectee Index could be used at the induction station, the same result being achieved as long as the index is administered and scored prior to the subject's neuropsychiatric interview. Use of the index at this stage, however, would be more costly in time and personnel.



Percentage of neuropsychiatrically unfit (as ascertained by interview method and military performance) "screened" by the Selectee Index.

It is recommended that a man achieving a passing score on the index be seen for a minute or two for confirmation. On the other hand, if he received a failing score the material uncovered by the index can be promptly used for establishing the selectee's status. Thus the neuropsychiatrist would have more time to spend with the frank and borderline individuals, which may comprise up to 40 per cent of all candidates. Under these circumstances this group referred for special consideration would contain most of those who should be rejected. For one reason or another the neuropsychiatrist may decide to accept a certain proportion of those who have received failing scores. This must be done on the basis of the examiner's interpretation of the selectee's neuropsychiatric equipment. From 80 to 90 per cent of those judged militarily unfit by the neuropsychiatrist are "screened" by the index.[12]

The index may also be used as an aid in classifying, grossly, patients who have already reached the neuropsychiatric wards of Army and Navy hospitals. The information gathered by the index is valuable as a supplement to the hospital history of such patients. Here it may be given routinely by the admitting nurse. In such use of the index it would be more important to examine the individual answers to questions than merely to record the final score.

SUMMARY—CRITICISM AND EVALUATION

The Selectee Index has shown itself to be effective in indicating the presence of anxiety states, hypochondriasis, asocial trends, convulsive disorders, migraine, asthma, peptic ulcer and allied syndromes. It focuses attention on borderline clinical states that may be missed because they fall between other departmental classifications (i. e. so-called psychosomatic disorders; table 4). It is less effective in the "screening" of those likely to exhibit so-called monosymptomatic disturbances, e. g. hysterical palsies, and the prepsychotic and early psychotic states. It is also defective in detecting obsessive states. Furthermore, it requires literacy which makes its universal application impossible. Although responses may be falsified, in practice we have noted this infrequently.

An important asset in the use of the Selectee Index is the ease and simplicity of administering and scoring. It is an effective time saver in placing before the interviewing neuropsychiatrist a clinical profile of the subject's personality defects. By bringing to the attention of the examiner a body of data as well as an indicator of the qualifications of the selectee, it should improve his accuracy and judgment. It is the brevity of the tests, their simplicity of scoring and their focus on special neuropsychiatric problems that recommend the use of the Selectee Index.[13]

12. With a variation of the scoring method, 5 to 15 per cent of the general population is referred for special consideration. Although with this method only about 55 to 60 per cent of the total militarily unfit are earmarked, the large majority of this group will be found unfit on examination; a fraction will be borderline.

13. Test blanks and scoring materials are available to responsible agencies on request to the authors at Cornell Selectee Index Project P206, New York Hospital, 525 East Sixty-Eighth Street, New York.

Clinical Notes, Suggestions and New Instruments

MULTIPLE METATARSAL FRACTURES ASSOCIATED WITH OSTEOGENIC SARCOMA

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The following report of a case of multiple metatarsal fractures associated with periosteal osteogenic sarcoma is worthy of record:

REPORT OF CASE

A boy aged 15 years was seen at the Mayo Clinic Oct. 25, 1929 because of a growth in his nose. He stated that he had consulted a physician because of frequent attacks of epistaxis, from which he had suffered for many years. Seven months prior to admission the physician, thinking that he would remove a polyp, found a firm tumor and removed a section of tissue, which on microscopic examination was reported as showing a spindle cell sarcoma. The tissue was submitted to a distinguished pathologist, who made a diagnosis of "cellular fibroma or sarcoma," and two treatments of radium were given. We made a diagnosis of benign fibroma of the nasopharynx. The tumor was treated by diathermy and radium, after which the patient had complete relief of symptoms. There was no other complaint at this admission, and the roentgenograms of the head and of the thorax were negative. The blood count, the results of urinalysis and the Wassermann reaction of the blood were also negative.

In April 1930, six months later, the patient returned to the clinic, a distance of 1,200 miles. He stated that two weeks prior to this time tenderness and a few days later swelling had developed across the forepart of the dorsum of the right foot. With rest and hot applications the swelling had reduced in size, but an apparent thickening was situated near the head

Fig. 1.—*a*, dorsal appearance of forepart of right foot, which shows spindle cell periosteal thickening in the distal half of the second metatarsal bone. There is pronounced elevation of the shaft of the second right metatarsal bone with no evidence of fracture. *b*, lateral view.

From the Section on Orthopedic Surgery, Mayo Clinic.

of the second metatarsal bone. The roentgenologist reported pronounced elevation of the periosteum of the shaft of the second right metatarsal bone with no evidence of fracture; roentgenograms of the thorax were negative. The forepart of the foot was tender on direct and lateral pressure. The patient did not recall an injury to the foot. Opinion varied as to the diagnosis: periostitis, infraction (Freiberg's infraction) and periosteal sarcoma (possible metastasis) being considered in the absence of definite roentgenologic evidence of fracture. Roentgenograms of the opposite foot and of the long bones of the other parts of the body proved to be negative. The patient's mother demanded that an exploration be made, as she had been told by the home physician that the mass in the metatarsal region was a sarcoma.

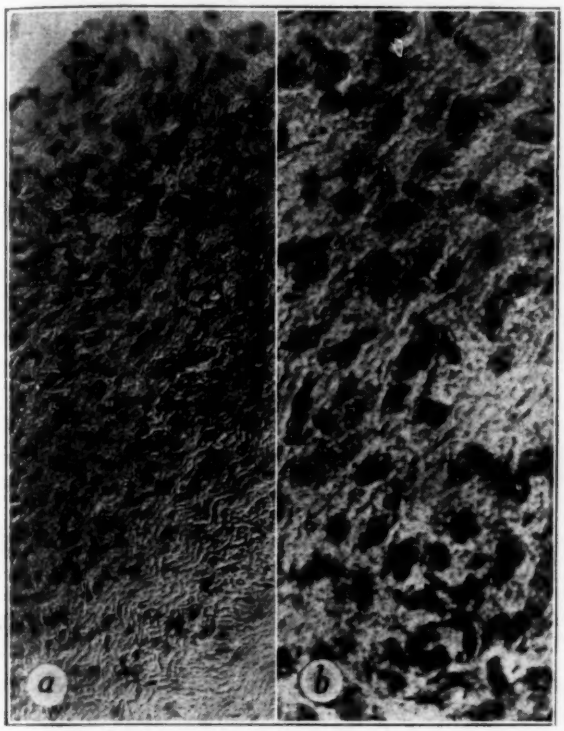

Fig. 2.—Tissue from second metatarsal bone. *a*, × 185; *b*, × 500

Operation was performed on April 9, 1930, at which time a hard, spindle shaped bony mass, involving the distal half of the shaft of the second metatarsal bone, was resected. The pathologist's preliminary opinion was that the lesion was an exostosis but later after decalcification, his final report was osteosarcoma, grade 2 (Broders' method). Two low voltage roentgen treatments were given to the foot. The wound healed by primary intention and one month after the operation the patient returned to his home, where he remained under the supervision of his physician (figs. 1 *a* and *b* and 2 *a* and *b*).

Roentgenograms taken five weeks after operation showed resection of the distal two thirds of the second metatarsal bone, and the remainder of the metatarsal bones were normal. Roentgenograms of the thorax were negative. Three months later the patient had gained in weight. His weight at this time was 137 pounds (62 Kg.), whereas eighteen months previously it had been 100 pounds (45 Kg.). He had received thirty-five injections of Coley's toxins, ¼ to 13 drops, during a period from June to August. Roentgengrams did not show any recurrence in the remaining proximal third of the second metatarsal bone, but there was some atrophy of the bones of the foot. Roentgenograms of the thorax were negative. Another low voltage roentgen treatment was given to the foot (Aug. 18, 1930). The patient was walking and seemed in good health. The examination of the nose did not show any recurrence of a lesion. The patient returned home.

About four months subsequent to the foregoing visit, the patient again reported for observation. He stated that he was feeling very well and had gained 10 pounds (4.5 Kg.) during a period of four months. Ten days prior to this admission, however, he had stepped on the right foot with the left foot and had injured the region of operation. Roentgenographic examination at home had been reported as showing sarcoma of the third metatarsal bone four days prior to admission. Our roentgenologist reported negative findings in the thorax, and a tumor involving the shaft of the third metatarsal bone, but no recurrence in the region of the second metatarsal stump. There was an enlargement of the lymph nodes of the groin. Excision of a node from the groin was advised and I felt that the tumor of the third metatarsal bone should be malignant in view of the previous pathologic findings but that possibly it was a fracture with callus (metatarsal fracture). Dec. 23, 1930 a lymph node was removed from the right groin, and on pathologic examination it was reported to be the seat of inflammation. The third metatarsal bone was exposed through a dorsal incision, and a grayish tumefaction with definite fracture was demonstrated. In view of the home physician's opinion, the previous pathologic diagnosis of osteosarcoma, the roentgenologist's report of tumor and the anxiety of the patient's mother, it was thought best to excise the metatarsal bone and make further studies to distinguish sarcoma from fracture with callus. This procedure was carried out, and subsequently the pathologist reported periostitis and an old fracture with formation of callus. Further irradiation was not advised, and the patient made an uneventful convalescence, after which he returned home on the seventeenth postoperative day. About three months later the mother reported that he was well, gained weight, slept well and walked well (fig. 3 *a* and *b*).

Six months later roentgenograms were negative except for periostitis. Approximately nine months later roentgenograms were forwarded to us which revealed periostitis of the first and fourth metatarsal bones with apparent fractures. About a month later the patient returned to the clinic for further treatment because of pain in the foot following a period of walking for four days. Roentgenograms were taken and revealed periositis with fracture of the first and fourth metatarsal bones of the right foot (fig. 4 *a* and *b*) but those of the thorax were negative. The patient also had a severe infection of trichophytosis and received treatment under the supervision of a dermatologist. There were enlargement and tenderness of the inguinal lymph nodes. The temperature was normal. The patient improved rapidly under treatment and was able to walk well. He returned to his home Oct. 27, 1931. He was advised to send roentgenograms to us at a later date so that they might be compared with those that we had of the foot. At this time there was no evidence of recurrence of the nasal tumor.

Fig. 3.—*a*, anteroposterior view, May 6, 1930, demonstrates partial resection of the second metatarsal bone. Note normal appearance of other metatarsal bones. *b*, anteroposterior view of right foot four months later; which shows resection of a portion of the second metatarsal bone and a fracture with pronounced periosteal thickening of the third metatarsal bone (march fracture).

At the time of the foregoing visits I was suspicious of a metatarsal fracture and questioned the patient as to the pos-

sibility of an old injury of the right foot. For the first time he remembered that he had been injured four years prior to this admission. He stated that in October 1927 a horse fell on his right foot, which was crushed and held by a steel stirrup, following which there were pronounced ecchymosis and swelling like a watermelon. He further stated that he had been unable to walk on the foot for three weeks and that it had been two months before the foot felt well. Furthermore,

Fig. 4.—*a*, anteroposterior view which demonstrates partial resection of the second and third right metatarsal bones and evidence of fracture and periosteal thickening of the fourth right metatarsal bone. There apparently also is a fracture of the first right metatarsal bone with secondary cortical thickening. *b*, lateral view.

he said that two years before admission, while he was running, something gave way in the foot and he could hardly walk because of pain, and he thought that there had been a little swelling in the foot before it gave way. It was then that he had consulted a physician, who took a roentgenogram and made a diagnosis of sarcoma of the metatarsal bone.

July 29, 1932 the patient was admitted again at the clinic; at this time he was feeling well and his weight was 158 pounds (72 Kg.). He walked at least 4 miles a day without difficulty except for a hammer toe. There was no evidence of recurrence of the nasal tumor, and the roentgenograms of the lungs were negative. The roentgenograms of the right foot, however, showed the region of resection of the second and third metatarsal bones and the fractures of the first and fourth metatarsal bones which had healed. Aug. 1, 1932 operation was performed while the patient was under local anesthesia. Because of the deformity a portion of the proximal phalanx of the fourth toe was excised. There was no recurrence of the tumor. The pathologist's examination of the bone gave negative results. The trichophytosis was improved.

Fig. 5.—*a* anteroposterior view taken May 10, 1934, which demonstrates resection of the second and third right metatarsal bones, and the fractures of the first and fourth right metatarsal bones healed and the callus absorbing. *b*, lateral view.

The patient returned home in one week and wished to know if he could play basketball.

May 9, 1934 the patient brought his sister to the clinic and reported for a reexamination himself. His weight was 168 pounds (76 Kg.). He had not had any pain or recurrence of symptoms in the foot and had been able to walk 20 miles with no sign of trouble. There had been no loss of weight. The roentgenograms of the thorax were negative. The ones of the foot showed some thickening of the periosteum of the fourth metatarsal bone and absence of the second and third metatarsal bones (fig. 5 *a* and *b*). Examination of the nose did not show any recurrence of the tumor. The blood count had been normal and the results of urinalysis negative throughout the entire time this patient had been under our observation.

The patient reported by letter in February 1938 stating that he had not had any further trouble with his leg or foot and had not had any further treatment. His weight was 190 pounds (86 Kg.) and he was in perfect health. He had been working daily in a shingle mill, where he had had to carry heavy blocks of wood all during the working hours.

April 10, 1943 the patient was seen again at the clinic because of another nasal hemorrhage. He stated that about two months prior to this admission his physician had removed a nodule from his nose. Examination did not reveal any evidence of recurrence of the nasal tumor, but there was suppurative hidradenitis of the left axilla, for which the patient was given three low voltage roentgen treatments. The blood count and the results of urinalysis were negative. He stated that he had had no difficulty whatever with the right foot and had been able to work a full day and to walk miles.

COMMENT

This case has been most interesting and I have followed it for many years. During this time I have made a study of metatarsal fracture and have written about it.[1] The second metatarsal bone, which was resected at the time of the first operation, had been saved. The pathologist, Dr. Broders, was requested to reexamine this tissue and on Sept. 10, 1943, thirteen years postoperatively, sent a report to me. He stated that in his opinion the lesion of the second metatarsal bone represented a "periosteal osteogenic sarcoma" and selected two photomicrographs (fig. 2 *a* and *b*). I believe that this is a case of multiple metatarsal (march) fractures of the right foot in which the tissue of the primary lesion of the second metatarsal bone had undergone malignant change.

While I have had sufficient opportunity to recognize the wide divergence of opinion concerning the interpretation of microscopic findings in cases of lesions of bone, I feel that this patient originally had a metatarsal fracture. The possibility of sarcoma of the nose with metastasis to the metatarsal bone was considered by his physician and surgical treatment insisted on by the parent, all of which led to excision of the tumor mass which Dr. Broders diagnosed as osteogenic sarcoma. I shall quote directly from my surgical notes made on April 9, 1930: "We were suspicious of a periosteal sarcomatous malignancy and thought best to take out the tumor. A specimen of the tumor was sent to the laboratory for decalcification and study. The tumor was hard and may be osteogenic in type. I tried to get a history of trauma, thinking the condition might be a low grade periostitis following injury, but we were unable to prove any injury at this time." This case, therefore, represents a thirteen year cure of osteogenic sarcoma with multiple metatarsal fractures.

1. Meyerding, H. W., and Pollock, G. A.: March Fracture; Deutschlaender's Krankheit, Marschgeschwulst, Fussgeschwulst, Marschfraktur, Fracture-de-Recrue, Pied Débile, Pied Forcé, Pied de Marche, l'Enflure du Pied, Pied Surchargé, Surg., Gynec. & Obst. **67**: 234-242 (Aug.) 1938; March Foot, Mil. Surg. **86**: 593-594 (June) 1940.

Growth of Scientific Knowledge on the Vitamin Needs of Man.—The growth of our understanding of the vitamin needs of man is a record of much blundering ignorance, some wishful thinking and a slow progress through controlled observation and experiments on man and other beasts. Blundering ignorance as to food composition and man's dietary needs brought on us the classic vitamin deficiency diseases (rickets, scurvy, beriberi, pellagra). The striking results of good food therapy in these diseases have engendered in our generation the utopian hope that a greater abundance of vitamins will rid man of nearly all real and imaginary ills. But more and better controlled observations and experiments will restore sense and scientific sanity, will remind us again that life is just not that simple.—Carlson, A. J.: The Growth of Scientific Knowledge on the Vitamin Needs of Man, *Journal-Lancet*, November 1943.

Special Article

AMERICAN HEALTH RESORTS

TYPES OF TREATMENT ADMINISTERED AT HEALTH RESORTS

M. B. JARMAN, M.D.
HOT SPRINGS, VA.

These special articles on spa therapy and American health resorts were prepared under the direction of the Committee on American Health Resorts. The opinions expressed are those of the authors and do not necessarily reflect the opinion of the committee. These articles may be published later as a Handbook on Health Resorts.

For convenience of discussion the types of treatment administered at health resorts fall under two headings: (1) the regimen which is common to all health resorts and which has to do with such items as rest, exercise, and dietary regulation; (2) therapeutic procedures which are used extensively in health resorts but which vary at the different resorts depending on their natural facilities.

THE REGIMEN

It is difficult to visualize a regimen at any health promoting institution in which emphasis is not placed on the regulation of rest, exercise and diet. These measures constitute the difference between the existence of a regimen and the lack of it. The regimens at different resorts differ in details but these items are basic. They supply the framework into which the particular natural resources of therapeutic value of a given resort may be fitted in the planning of the therapeutic program.

One resort may utilize to the fullest extent the components of climate, such as sunshine, temperature and relative humidity, with which it is endowed by virtue of its geographic location. Another makes use of sea bathing and the climate which goes with its situation on the seacoast. Others use mineral spring waters for drinking and bathing purposes. When these and other natural resources are used at health resorts for health purposes they are not used alone but as a part of a regimen planned with proper consideration for the needs of the patients treated.

THERAPEUTIC AGENTS EXTENSIVELY USED AT HEALTH RESORTS

Separate articles in this series have been written on "underwater gymnastics," "climate and disease" and "thalassotherapy." No further mention will be made of these. Other types of therapy extensively used but not the subjects of separate articles will be discussed briefly. For the most part these consist of various forms of physical therapy. Years before medical schools [1] began to teach the subject or before hospitals or clinics installed departments of physical therapy, many health resorts were making extensive use of some of its forms. Among these are hydrotherapy, which includes both the drinking of water and baths, light, massage, heat, mud and to a lesser degree electrotherapy.

Hydrotherapy.—A large percentage of health resorts are spas. The use of water in treatment is the distinguishing feature of such institutions. At some the drinking of water is stressed; at others, baths are emphasized; at many, both are used and these are combined with other health promoting procedures which constitute the regimen of the spa.

Drinking Water.—When the drinking of a particular water is stressed at a spa, such a water is often referred to as a "mineral water." A satisfactory definition of a "mineral water" is difficult to find. Here are some samples: The Quality of Water Division of the United States Geological Survey finds it convenient for statistical purposes to define a mineral water as "one sold in a bottle"! [2] The International Food Congress held in Paris in 1909 adopted the following definition: "A mineral water is a natural water proposed for consumption on account of its special therapeutic or hygienic properties." The geologist defines a mineral water as "one derived from deep-seated natural sources." The chemist thinks of a mineral water in terms of the amount of dissolved minerals it contains and hesitates to classify a water under this heading unless it contains at least 1 gram of dissolved minerals per liter of water. From the medical point of view mineral water has been defined as "one from natural sources which has therapeutic value." Other definitions are "any natural water which is used on account of special constituents" and "a natural water containing sufficient salts or gases in solution to give it its properties and peculiar taste." From these samples—and others not listed—one in search of a definition of "mineral water" has a great variety of proposed definitions from which to make a choice.

At some spas the drinking of water is almost dramatized. It is done according to precise directions as to time and amount and sometimes to the accompaniment of music. This provides one means for getting the patient to take enough water and seems to give some types of patients a sort of spiritual uplift. Water taken internally serves as a diuretic, and some waters are effective saline cathartics.

There are those [3] who feel that some natural waters possess peculiar properties of therapeutic value—now resting on an empirical basis—which will be established scientifically at some future date when the methods of scientific investigation shall have been improved sufficiently and applied to the solution of the problems involved. In support of this feeling attention is directed to well known examples in the history of medicine in which therapy was long used and well established on an empirical basis, only to be explained scientifically some time later. In the field of mineral waters an example often cited is that of the springs in Austria famed as "goiter waters" years before the discovery of the iodine content of the water helped to explain its effect on the function of the thyroid gland. When claims are made for unusual therapeutic values of waters, suggested explanations for such claims often include reference to "catalytic agents" or "radioactivity." Physicians who admit freely that chemicals occurring in natural waters will bring about the same

1. Sanger, W. T.: Physical Therapy in Education and Research, Arch. Phys. Therapy **22**: 581-583 (Oct.) 1941.

2. Collins, W. D.: Mineral Waters in 1923, U. S. Geological Survey, Department of Interior, p. 109.

3. Baudisch, Oskar, and Davidson, David: Natural Waters in the Light of Modern Research, Arch. Int. Med. **40**: 496-520 (Oct.) 1927.

pharmacologic action as do chemicals derived from other sources when administered in the same dosages become skeptical when the claim is made that the chemicals in natural waters will bring about a pharmacologic action different from that of the same chemicals derived from other sources. The application of new theories and improved technic in research may in the future prove that chemicals which are now believed to be the same are in reality not exactly the same. Such a development might explain in scientific terms some of the results of mineral water therapy which now rest on an empirical basis.

Many physicians who prescribe the use of mineral waters and others who have given some thought to the subject are of the opinion that more often than not the most important chemical in the prescribed potion is water. The psychologic effect of prescribing mineral water according to exact directions is recognized fairly generally. Another article in this series deals with trace elements in waters. It is not likely that unusual claims made for mineral waters will be recognized by the medical profession unless such claims can be established when judged by scientific standards of the level applied in the evaluation of other therapeutic measures. In spite of this, physicians of spas have learned in many instances to make use of the waters at hand for drinking purposes in planning the regimen of the spa; and, in the effect that drinking of the mineral water has on the feeling of well being of the patient, it is by no means the least important part of such a regimen.

Baths.—The great variety of baths given at spas can only be listed here. Among the more important are sponge bath, tub bath, evaporation bath, whirlpool bath, carbonated bath (Nauheim), steam bath (Russian), mud pack or bath, sitz bath, medicated bath, brine bath, sulfur water bath, cabinet baths of several varieties, cold spray, needle douche or spray, alternating hot and cold douche (Scotch), fan douche, Vichy douche and Aix douche. Some spas are equipped with pools adapted for administering underwater gymnastics. Continuous baths are more likely to be used in institutions for the treatment of the mentally sick, and baths of the type given in the Hubbard tank are more common in the departments of physical therapy of hospitals.

For detailed descriptions of these baths, the technic of administering them, their physiologic effects and the indications for their use, the reader is referred to modern textbooks on physical therapy.[4]

In the administration of hydrotherapy at health resorts an attempt is made to take advantage of the natural resources with which the particular resort is endowed. One such resort may have an abundance of naturally carbonated water. Such an institution is supplied by nature with one of the essentials of the carbon dioxide (Nauheim) bath. Advantage is taken of this natural resource, and the resort is organized accordingly for treating patients suffering from chronic cardiovascular diseases. A warm spring in a suitable climate may determine the site of an institution for treating victims of poliomyelitis. Nature provides the warm water and the climate, and man develops a properly equipped and staffed institution in this location for the use of underwater gymnastics and other recognized treatment for such patients. Another resort may have an abundance of naturally hot water. Advantage is taken of this circumstance, and the resort is equipped to give baths in which the physical properties of the water—aside from any consideration of its chemical content—are of prime consideration.

At the better spas hydrotherapy is administered under medical supervision. The prescribing physicians look on this as a means of utilizing the facilities at hand to the best advantage in giving the patient as a part of his regimen a well established and a very useful form of treatment.

Light.—Light is recognized as a useful therapeutic agent. The sun is an inexpensive source of light. Solar radiation does not reach all parts of the earth's surface with equal intensity. The intensity varies with the latitude, season, hour, elevation and atmospheric conditions, such as the moisture content and the presence or absence of dust and smoke. For these reasons health institutions have been located in certain parts of the world because of the relative intensity and constancy of the solar radiation. In other words, the site of the institution is determined by this particular natural resource just as the site of a spa is determined by another natural resource, namely a group of springs. The Swiss Alps are an example, and there are many localities in the United States adapted by nature for this purpose.

The two chief components of sunlight of recognized use in therapy are infra-red rays and ultraviolet rays. Because sunlight is not subject to control, because one type of radiation may be desired without the other and for the further reason that there is an abundance of enterprising manufacturers of electrical apparatus, both types of rays have been produced artificially. Textbooks[4] on physical therapy describe this apparatus, tell how to use it and give the present concepts of the physiologic actions of the different types and the indications for their use.

Light supplied by direct rays from the sun and light supplied by artificial means provide a type of therapy extensively used at health resorts.

Massage.—This form of physical therapy, extensively used at health resorts, has been the means of giving a great deal of comfort to a great many people. Manual massage and mechanical massage have both been used. Excellent descriptions of the technic[5] and the present concepts of the physiologic effects[6] of massage can be found elsewhere. Manual massage given by trained masseurs under medical supervision constitutes an important part of the regimen at many resorts. Some health resorts are equipped with a complete set of machines of the type devised by Dr. Gustaf Zander of Stockholm for active and passive exercise of the voluntary muscles. Even at resorts or hospitals where these machines have been installed at great expense and are still available, little use is made of them because it has been found that the purpose for which they were designed can be accomplished more effectively, more safely and less expensively by other means. The physician, whether at a health resort or not, who has at

4. Handbook of Physical Therapy, ed. 3, Chicago, American Medical Association, 1939. Krusen.[7]

5. Coulter, John S.: Technic of Massage, in Handbook of Physical Therapy, pp. 88-95.

6. Pemberton, Ralph: Physiology of Massage, in Handbook of Physical Therapy, pp. 78-87. Pemberton, Ralph; Coulter, John S., and Mock, Harry E.: Massage, J. A. M. A. **94**: 1989-1997 (June 21) 1930.

his command intelligent men and women well trained to give massage is armed with a therapeutic tool the value of which is difficult to estimate when measured in terms of the help and comfort rendered to patients.

Heat.—A recently published textbook [7] on physical therapy devotes one hundred and thirty pages to the subject of thermotherapy and many more pages to diathermy. To such a textbook one should go for information as to the sources of heat both for local and for general application, its physiologic effects, and indications for and contraindications to its use. Heat is mentioned here simply because it is used extensively at health resorts as it is wherever sick people are treated. As a means of applying heat some resorts utilize their natural resources, such as hot water or mud, for the purpose but few confine themselves solely to these methods.

Mud.—Mud baths and mud packs are sometimes used as a method of applying heat. Muds have been classified according to their diminishing silicate content as (1) purely mineral, (2) mainly mineral and (3) mainly vegetable.[8] The application of mud therapy consists of baths in specially built tubs or mud pools and the local application of mud packs. The use of mud in treatment is a much more common practice at European resorts than at those of America. As one example of this difference I found frequent references in European literature to the use of mud in the treatment of disorders of the genitourinary tract, whereas in a modern American textbook [9] on gynecology and two recently published textbooks [10] on urology I was unable to find a reference to the use of mud in these specialties. It appears from examination of the literature that American physicians, with some exceptions, are in accord with the sentiments expressed in these statements: "Often vague claims are advanced for specific therapeutic actions of certain types of mud. There is as yet no convincing proof that any such mud contains any constituents which enhance its effectiveness, when applied to the surface of the body. . . . It would seem that there are no particular advantages of mud packs over the simpler and cleaner methods of local application of heat." [11]

If the application of heat to the surface of the body is needed, the use of mud provides one method by which it can be done. This method is made use of as a part of the regimen at European and—to a lesser extent—at American resorts.

Miscellaneous.—Many other types of treatment, of course, are administered at health resorts. The various types of electrotherapy are often made available to complete the physical therapy setup. One form of this—either conventional or short wave diathermy—is now used almost universally at resorts as a method for deep administration of heat. Since the people who go to health resorts are subject to the same ills as are people in general, no type of treatment is excluded.

7. Krusen, Frank H.: Physical Medicine, Philadelphia, W. B. Saunders Company, 1941.
8. Singer, Charles I.: Effective European Methods of Hydrotherapy Neglected in the United States, Arch. Phys. Therapy **17**: 631-635 (Oct.) 1936.
9. Crossen, Harry Sturgeon, and Crossen, Robert James: Diseases of Women, St. Louis, C. V. Mosby Company, 1941.
10. Keyes, Edward L., and Ferguson, Russell S.: Urology, ed. 6, New York, D. Appleton-Century Company, 1936. Dodson, Austin I.: Synopsis of Genitourinary Diseases, ed. 3, St. Louis, C. V. Mosby Company, 1941.
11. Krusen, Frank H.: Physical Medicine, Philadelphia, W. B. Saunders Company, 1941, chapter 3, p. 151.

Council on Pharmacy and Chemistry

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING STATEMENT.

AUSTIN E. SMITH, M.D., Secretary.

USE OF ESTROGENIC SUBSTANCES FOR UTERINE BLEEDING

Clinical study of irregular menstruation during the last decade has suggested to many observers that the occurrence of prolonged flows, excessively vigorous flows and unduly frequent flows may all be evidences of hypofunction of the ovaries. Quantitative information is not available to decide whether this means decreased amount of estrogenic hormone production or of progesterone production or chronologic variation in the cyclic production of these materials. The most frequent accompaniment of such bleeding history has been the persistence of the estrogenic effect in the endometrium, sometimes accompanied by the development of the picture known as glandular and cystic hyperplasia of endometrium. Carefully conducted clinical experiments have indicated that such flowing may be interrupted by the use of large doses of estrogenic hormone or synthetic estrogen. Some attempts have been made to restore regular cycles of bleeding by administration of estrogen followed by a combination of estrogen and progesterone, or estrogen followed by progesterone alone. The clinical benefits obtained by such methods have been at least promising, although there is not adequate evidence to justify claims for cure of a condition which is frequently persistent in terms of months or years.

Before such therapy is applied, it is considered important that careful investigation should be made to eliminate other causes of bleeding tendencies systemically and also to eliminate local pelvic disorders of neoplastic or inflammatory type. Occasionally it may be wise to use very brief courses of estrogen to arrest bleeding so that such studies can be carried out immediately after the cessation of the flow. With such precautions in mind, additional uses of estrogen seem warranted, and the following claims will be recognized in N. N. R.:

It has been found possible to interrupt the prolonged and excessive flowing of many women with uterine bleeding of probable endocrine origin by brief courses of intensive estrogenic therapy. This is considered safe practice only when the interval of freedom from bleeding is used to eliminate local pelvic lesions as the cause of the flowing. The subsequent administration of sequences of estrogenic substances and progesterone to reestablish cycles of flowing is a possible method of alleviating a condition which is widely believed to result from deficiency of one or both of the ovarian hormones.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary.

DIETHYLSTILBESTROL (See New and Nonofficial Remedies, 1943, p. 403).

The following additional dosage form has been accepted:

GEORGE A. BREON & COMPANY, INC., KANSAS CITY, MO.

Tablet Diethylstilbestrol: 5.0 mg.

THIAMINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1943, p. 590).

The following dosage form has been accepted:

MCKESSON & ROBBINS, INC., BRIDGEPORT, CONN.

Tablets Thiamine Hydrochloride: 0.5 mg., 1 mg. and 3 mg.

NICOTINAMIDE (See New and Nonofficial Remedies, 1943, p. 598).

The following dosage form has been accepted:

WILLIAM R. WARNER & CO., INC., NEW YORK

Ampul Solution Nicotinamide, 100 mg. per cc.: 1 cc.

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SATURDAY, JANUARY 22, 1944

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PATHOLOGIC LESIONS LIKE THOSE OF RHEUMATISM

The possibility that the cardiac and other lesions in rheumatic fever might be the result of reactions of hypersensitivity to bacterial products has received much attention. Many attempts have been made to produce Aschoff bodies by injecting bacteria into sensitized animals, but so far without conclusive results. The rheumatic lesions are apparently of a strictly specific nature. In the course of their study of tissue reactions of rabbits hypersensitive to serum, Rich [1] and his associates observed not only arterial lesions apparently identical with those of periarteritis nodosa but also cardiac lesions resembling closely the lesions of rheumatic carditis. The rabbits were killed one to five weeks after the systemic reaction to horse serum.

In nature and situation cardiac lesions in such rabbits corresponded closely to the lesions of rheumatic carditis: there was focal edema of the connective tissue with disintegration of collagen fibrils; also pericardial, valvular and mural inflammatory infiltrations with cellular foci in the endocardium and about the arteries in the myocardium. Besides macrophages and lymphocytes these foci contained cells peculiar to the Aschoff body, particularly about areas of degenerated collagen. These structures in the heart of rabbits hypersensitive to horse serum are well illustrated in the paper by Rich and Gregory.[2]

There is no question that the rabbit lesions described closely resemble those of rheumatic carditis. Rich and Gregory discuss in detail the "circumstances compatible with the view that the lesions of rheumatic fever may be the results of focal reactions of the anaphylactic type" but without making any claims that the genesis of rheumatic fever has been explained. Their results are significant, however, because they indicate promising lines for further study. Reactions of anaphylactic nature may play a larger part in human disease than now understood.

The article by Selye and his associates in this issue of The Journal (page 201) on the hormonal production of arthritis describes results of an elaborate experimental attack on rheumatic and related problems from a different angle. In brief, the Canadian investigators report that in animals, particularly the rat, relatively large doses of desoxycorticosterone acetate under certain conditions can cause polyarthritis associated with the formation of Aschoff bodies in the heart and at times periarteritis nodosa, besides nephrosclerosis and hypertension.[3] This polyarthritis may microscopically resemble that of rheumatic fever. It was produced more readily in thyroidectomized or adrenalectomized than in intact rats, especially on exposure to cold. The results are interpreted to indicate that "the adrenal cortex may play an important role in the pathogenesis of rheumatic and rheumatoid conditions in man."

As the report does not mention bacteriologic studies of the experimental animals, the question of the possible role of infection in the results, especially in the acute polyarthritis, must be left open at this time. The results in general, including those of the survey of the clinical literature, do appear to support the view that "hormonal factors can act either as causative

1. Rich, A. R.: The Role of Hypersensitivity in Periarteritis Nodosa, Bull. Johns Hopkins Hosp. **71**: 123 (Sept.) 1942.

2. Rich, A. R., and Gregory, J. F.: Experimental Evidence That Lesions with the Basic Characteristics of Rheumatic Carditis Can Result from Anaphylactic Hypersensitivity, Bull. Johns Hopkins Hosp. **72**: 239 (Oct.) 1943.

3. Selye, Hans, and Pentz, E. S.: Pathogenetical Correlations Between Periarteritis Nodosa, Renal Hypertension and Rheumatic Lesions, Canad. M. A. J. **49**: 264 (Oct.) 1943.

or as predisposing agents in the production of joint lesions." These experiments on the actions of the adrenal cortex in the production of disease open another promising field for further investigation.

MAINTENANCE OF EDUCATIONAL STANDARDS IN MEDICAL EDUCATION IN WARTIME

The freedom of universities to choose their faculties without interference by political, family, social or other influences is a strong bulwark of education. This truth, highly important at all times, is no less valid now, particularly in medicine, dentistry and engineering. These forms of specialized training contribute immediately to the prosecution of the war. The maintenance of standards in teaching concerns the future of universities as centers of education and research. In medicine the care of patients, both civilian and military, is an additional responsibility of university staffs.

Our principal efforts are now bent to provide medical graduates in large numbers and in the shortest time consistent with reasonably good preparation. Much has been said about maintenance of teaching and hospital staffs, but comparatively little attention has been given to the directors of departments. The departmental head is a leader in all the work of his division; often he exercises an influence in the conduct of associated sectors in the university. Some directors of medical departments have been able to accept assignment to military and other governmental duties because a competent assistant can substitute adequately. The departmental heads who remain often do so because a satisfactory understudy is not available. Among those who remain at their posts, death and disability take their toll at the same rate in war as in peace, and replacement becomes a matter of serious and often urgent moment. The selection of a new director is just as significant in war as in peace, because the appointment is permanent. Thus the present and the long future of the universities are at stake.

The number of new directors at any given time is not large and probably of little consequence in reference to the number of professional men required for the armed forces. The wide ramifications of education are such that the freedom of choice in selection of faculty members has a bearing on the future of our country only second in importance to victory. A sympathetic understanding of the matter by the military agencies must lead to cooperation. Failure to comprehend these realities may limit the choice of teachers to those physically disqualified for military service, those sadly lacking in desire to serve, those too old to be useful to the government and refugees from foreign oppression. No doubt suitable directors may be found among individuals in these categories. However, common justice and future developments should not permit exclusion from the list of candidates of those who have elected to serve their country in active service. Zeal for education is the keystone of democracy. This principle should be a guide to all concerned with our nation's welfare. Proper cooperation of military authorities with civilian educators in obtaining release from military duties whenever feasible of those concerned with direction of education in professional schools is fundamental to postwar professional rehabilitation.

Current Comment

TSUTSUGAMUSHI FEVER

Tsutsugamushi fever, called also scrub typhus, mite bite fever, tropical typhus and other names, is endemic in Sumatra, New Guinea, Java, Borneo, Formosa, Japan, Australia and the Federated Malay States. Scrub typhus is acquired on exposure to certain types of vegetation in circumscribed areas of untilled open country and especially land that has been cleared of jungle and has subsequently been overrun with weeds and scrub. The etiologic agent is Rickettsia orientalis. This agent is mite born. Corbett [1] points out that the primary pathologic changes include vasculitis and perivasculitis with slight tendency toward thrombus formation. The perivascular extension of the infection involves the parenchyma of various organs, and these changes are reflected in the clinical picture. Lipman and his colleagues [2] state that the usual incubation period probably varies from four to twenty-one days. Vague complaints of malaise, chilliness, vertigo, headache and insomnia may precede the onset of fever. Physical examination often reveals an eschar at the site of the mite bite. Extensive adenopathy is common and is characteristic. The spleen is frequently but not invariably palpable. By the fifth to the eighth day of the disease the majority of patients have a maculopapular, erythematous rash, involving as a rule the lateral or anterior thorax or abdomen with the extremities least affected and the face not involved at all. The rash lasts about eight to twelve days. The febrile stage may persist up to four weeks, the average duration being seventeen days. Rapid breathing in severe cases accompanied by dyspnea is common. Altered respiratory symptoms with increased respiratory rate is usually out of proportion to the physical findings. The cardiovascular system is profoundly affected by the disease. The pulse rate is usually increased in uncomplicated cases but does not exceed 120 beats per minute; when it becomes more rapid it signifies a grave prognosis as a precursor of myocardial failure. Extrasystoles are common; a soft, blowing apical systolic murmur without any demonstrable clinical or x-ray evidence of cardiac enlargement is also common. In fulminating cases one or more of the following are usually noted: cyanosis, severe dyspnea, profound

1. Corbett, Austin J.: Scrub Typhus, Bull. U. S. Army M. Dept., November 1943.
2. Lipman, Bernard L.; Byron, Robin A., and Casey, Adrian V.: Clinical Survey of Scrub Typhus Fever, Bull. U. S. Army M. Dept., January 1944.

tachycardia, auricular fibrillation, gallop rhythm, pulsus alternans or cardiac dilatation. In 2 of the cases studied by Lipman and his colleagues death resulted from massive pulmonary emboli. Treatment is nonspecific. Military personnel with the disease should receive careful cardiovascular and electrocardiographic study before being returned to full or limited duty. The distribution of this disease in areas now being entered for the first time by our troops makes it imperative that its symptoms be kept clearly in mind.

INTRAVENOUS GELATIN

Hogan[1] in 1915 reported beneficial effects from intravenous injections of gelatin in 6 cases of shock. Hogan's report, according to Amberson, represents the first attempt to use a colloid for infusion. Although the method itself provoked little interest, it stimulated others to experiment with acacia. Because of renewed interest in blood substitutes and in parenteral nitrogenous nutrition, Brunschwig and his associates[2] attempted to determine in animal experiments and in man whether or not gelatin injected intravenously may be well tolerated and also to determine if gelatin remains inert in the organism or can be metabolized. They found in a limited number of clinical cases that gelatin is well tolerated when injected intravenously, that this tolerance extends to repeated, delayed injections and that hypersensitivity does not develop. They also observed that gelatin injected intravenously is at least partly catabolized, since increased urea nitrogen excretion usually obtains when such injections are made. The authors call attention to the fact that gelatin alone is not an adequate source of nitrogen for nutritional purposes because it does not include all essential amino acids. These experiments suggest that intravenous injection of gelatin may be utilized as a method of administering nitrogen. The authors warn, however, that gelatins vary widely in character, depending on the source and method of manufacture. Therefore the results reported cannot be applied to all types of gelatin.

ORAL VACCINES FOR COLDS

Recent communications to the offices of the American Medical Association indicate that the prescription and sale of cold vaccines is again taking place on a large scale. This, in the face of the recognized lack of scientific evidence for the value of these preparations, is indication of irresponsibility on the part of some manufacturers of pharmaceuticals. The scientific evidence against the value of oral cold vaccines is overwhelming; consequently individual physicians and firms who deal in pharmaceuticals and who lend themselves to wholesale uncontrolled distribution of such preparations are perpetrating an unwarranted commercial assault on the public pocketbook.

1. Hogan, J. J.: The Intravenous Use of Colloidal Solutions in Shock, J. A. M. A. **64**: 721 (Feb. 27) 1915.
2. Brunschwig, Alexander; Scott, V. B.; Corbin, N., and Moe, R.: Observations on the Intravenous Injection of Gelatin for Nutritional Purposes, Proc. Soc. Exper. Biol. & Med. **52**: 46 (Jan.) 1943.

PHYSIOLOGIC NONSENSE AND POLIOMYELITIS

Since the demonstration of the value of the treatment of poliomyelitis described by Miss Kenny, studies have been made in an attempt to explain the physiologic and pathologic conditions associated with the observed effects. The adherents of the Kenny theory have asserted that the harm of infantile paralysis is due to "spasm" of the affected muscles rather than to a flaccid paralysis. Qualified investigators[1] have shown that this is not the case. As stated recently by Cobb,[2] it is being demonstrated once more in the history of medicine that new and empirical methods of treatment backed by uncritical enthusiasm may produce many cures but much physiologic nonsense. The treatment may be good, but the ex post facto conclusions of the therapeutist are usually bad.

EMERGENCY MATERNITY AND INFANT CARE PROGRAM

In the Organization Section in this issue of THE JOURNAL appears a statement from the Children's Bureau of the United States Department of Labor indicating the regulations that have been prescribed for those rendering emergency maternity and infant care for the wives and babies of enlisted men. Simultaneously a leaflet has been mailed to every woman receiving dependency allowance informing her that wives of enlisted men are entitled to medical, nursing and hospital care as needed and available through pregnancy, childbirth and six weeks thereafter, that the infants are entitled to similar care until they are 1 year old and that the payments are made by state health departments directly to doctors and hospitals. The leaflet indicates further that the wife may apply for maternity care as soon as she knows she is pregnant and for care for her baby at any time by filling out an application which she gets from the doctor, hospital, clinic, health department, Red Cross chapter or the state health department. The doctor who is to give the care signs the application, which is then forwarded by either the wife or the doctor to the state health department. Services of a consulting physician as needed and available may be provided under the program. In the Organization Section of THE JOURNAL last week appeared an extended discussion of this subject before the Annual Conference of Secretaries and Editors of Constituent State Medical Associations. Some of the difficulties already apparent in the situation were emphasized. Many physicians expressed the fear that this was but the entering wedge for a government system of medical service. The appropriation under which this service is provided is distinctly an emergency war appropriation. Further modifications or extensions of this procedure should be considered by the medical profession in the light of their relationship to the practice of medicine now and in the future.

1. Moldaver, Joseph: Physiopathologic Aspect of the Disorders of Muscles in Infantile Paralysis, J. A. M. A. **123**: 74 (Sept. 11) 1943. Watkins, Arthur L.; Brazier, Mary A. B., and Schwab, R. S.: Concept of Muscle Dysfunction in Poliomyelitis, Based on Electromyographic Studies, ibid. **123**: 188 (Sept. 25) 1943.
2. Cobb, Stanley: Review of Neuropsychiatry for 1943, Arch. Int. Med. **72**: 795 (Dec.) 1943.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeons General of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession.

ARMY

AVIATION MEDICINE

(Condensed from the Report of the Commanding General of the Army Air Forces to the Secretary of War)

One of the most important tasks of the Air Surgeon's office is setting the physical and psychologic standards for the selection of young men for flight training, and the proper classification of the men as bombardiers, pilots and navigators. This is accomplished by utilizing batteries of tests from which a combined aptitude score is obtained.

When an airplane goes from one theater to another it is carefully inspected so that it does not transport germs or disease-carrying insects.

Calculating the medical and dental supplies needed in all war theaters—for jungle, desert, mountain and arctic operations—is another task of the Air Surgeon. During the past fiscal year the Air Surgeon's office has coordinated the development and purchase of several hundred thousand aeronautic first aid kits, Navy type first aid kits for life rafts, airplane ambulance chests, and frying pan kits which are placed in the seat of the flier's parachute. The frying pan kits contain amphetamine for the temporary relief of fatigue, halazone for chlorinating water, atabrine for malaria, boric acid ointment for burns, sulfadiazine to prevent infection, iodine swabs, salt tablets, bandages, needle and thread, soap for washing, and tea tablets for a warming cup.

Still another task of the Air Surgeon is directing the air evacuation of wounded men. Since Pearl Harbor, over 125,000 casualties (sick, wounded and injured) have been flown from combat zones in American transport planes. This simple statement encompasses one of the greatest accomplishments of modern aviation medicine—an accomplishment of interest to every parent of a soldier in any branch of the Army.

The first obstacle that had to be surmounted in developing the air evacuation service was the supposed danger of killing the patient—estimated by some medical authorities to be a real one in the case of head, chest, spine and internal injuries. Yet the safety of transporting wounded by air has been demonstrated beyond doubt. In the Mediterranean theater from the beginning of the Tunisian campaign in November 1942 to the close of the Sicilian campaign in September 1943 more than 25,000 men with all types of illnesses and wounds were transported 8,000,000 miles by air. Only 1 patient died, 1 in 25,000.

The second obstacle was the shortage of air transports. Airplanes, it was said, could not be spared solely for such purposes. This obstacle was surmounted by the simple conversion of cargo planes carrying troops and supplies to the front to the transportation of patients on the return trip to the rear. Air evacuation is a boon to the morale of ground troops and aids the theater commander by quick removal from the battle zone of his noneffectives. Trips which would take weeks by hospital train or ship are now flown, in a day. Air evacuation is an impressive example of successful cooperation among Army air, ground and service forces.

Flight nurses are carefully selected and trained in phases of aerial medicine, intravenous therapy, tropical medicine, field sanitation, compass, map and aerial photography orientation, what to do in case of air and gas attacks, and other matters. The lives of the men may depend on the proficiency of a flight nurse. Besides looking after the comfort and needs of the sick and wounded men the nurse can also be helpful in maintaining high morale. Each patient requires individual attention. The nurses of the Army Air Forces have met the tests of battle in a manner to merit unqualified approval.

Complete hospital service now moves with the mobility of war itself. Six days after the Army hospital in Nome, Alaska, burned down a new and complete 25 bed hospital had been flown in from a distance of 3,400 miles. Two field hospitals were flown over the Owen Stanley Mountains in New Guinea. In Sicily a 50 bed hospital was moved by air a distance of 44 miles in two and one-half hours from the time it was dismantled until the time it began receiving patients at the new site.

In designing P-47 Thunderbolt fighters, which maneuver at 400 miles an hour, and Flying Fortress bombers, which can climb to 40,000 feet altitude, aeronautical engineers have carried aircraft performance far beyond the natural tolerance limits of the human body. To make their planes humanly as well as technically practicable the engineers have formed a close partnership with medical scientists.

The main oxygen engineering achievement of the last two years has been the production of the demand type oxygen system, replacing the continuous flow type still found in the older planes. The demand system automatically supplies the flier the amount of oxygen he needs at any altitude up to 40,000 feet. All flying personnel are given indoctrination in the use of oxygen by high altitude training units equipped with low pressure chambers. These units make simulated flights to 38,000 feet, and the necessity of rigid oxygen discipline at high altitudes is made clear to every airman.

Constant research is being done on flying fatigue. Rest camps have been established in theaters of operation and in the United States. In all our active units the flight surgeons keep a close eye on all personnel to discover those men who need a change or rest before the severe demands of combat flying result in serious psychologic maladjustments.

The Convalescent Training Program, which was begun with our men in training, is now being extended to fliers overseas. It stems from a program carried out in the 239 Army Air Force hospitals in this country during the past year. The rehabilitation program includes physical exercises, which may begin in bed and end with outdoor games, and educational pursuits of a vocational or military nature. About 2,500,000 man hours each month are devoted to such activities in the Army Air Forces.

With the intention of achieving equal results in the rehabilitation of the wounded, sick and war weary men, the Army Air Forces are establishing seven rehabilitation centers in the United States. Every known facility is being used to aid these physically and psychologically wounded soldiers to make a new place for themselves in military or civilian life. Our interest and responsibility do not stop at the moment our men drop their bombs on the target.

SHARP INCREASE IN RESPIRATORY DISEASES IN THE ARMY

The War Department recently announced a sharp increase in respiratory diseases in the army similar to that reported among the civilian population of the United States, beginning about November 20 in the Sixth Service Command, which includes the states of Illinois, Wisconsin and Michigan. Current reports, however, indicate that the epidemic is subsiding in this area, but in the South and Southwest, where the outbreak came more recently, the incidence continues to rise.

There has been no increase in the number of cases of pneumonia, and only one death due to influenza has been reported. There were 48,490 cases of common respiratory infections,

including influenza, reported in the army in the continental United States during the week ended December 4, and approximately 150,000 cases during the week of December 11, which compares favorably with the incidence rate reported among the civilian population. The medical department of the army, aided by the Board for the Investigation and Control of influenza, is carefully watching the situation. The Influenza Commission of the board has established laboratories at strategic points throughout the country to observe epidemics, check for the presence of the true influenza virus and inform the Office of the Surgeon General. The War Department has already made plans to assist in furnishing emergency hospitalization, drugs and medical care to stricken areas in the event of an influenza epidemic of really serious proportions.

ARMY PERSONAL

Col. Manfred U. Prescott, formerly of San Francisco, has been appointed post surgeon and senior medical officer at the Scott Field (Illinois) Army Air Forces Training Command radio school. He will succeed Col. Edwin L. Brackney, who has been transferred to another base. Dr. Prescott graduated from the University of Illinois College of Medicine in 1923 and for the next five years practiced medicine in Chicago and taught anatomy and surgery at the University of Illinois. He joined the medical reserve as a lieutenant in 1925 and was promoted to captain in 1929 and to major in 1935. He was called to active duty with the Army in June 1941 with the rank of lieutenant colonel.

PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

FEDERAL FUNDS FOR RELOCATION OF PHYSICIANS

Preliminary steps have been taken to make effective the authority recently granted by Congress to the Public Health Service to provide financial aid to civilian physicians who will agree to relocate to critical areas. Herewith is reproduced a letter sent to all state health officers by the service, under date of January 12, concerning the program. A similar letter has been sent by the Central Office, Procurement and Assignment Service, to all state chairmen of the Procurement and Assignment Service. It is understood that the details of the program will be worked out in the near future. The letter follows:

"Public Law #216, 78th Congress, approved by the President on December 23, 1943, appropriates to the United States Public Health Service the sum of two hundred thousand dollars ($200,000) during the fiscal year ending June 30, 1944 for the relocation of private practicing physicians and dentists. This act provides in part as follows:

"'Provided, That the Surgeon General is authorized on application of a municipality, county or other local subdivision of government duly approved by the state health department having jurisdiction over said municipality, county or other local subdivision of government to enter into agreements with private practicing physicians and dentists under which, in consideration of the payment to them of a relocation allowance of not to exceed $250 per month for three months and the actual cost of travel and transportation of the physician or dentist and his family and household effects to the new location, such physician or dentist will agree to move to and engage in the practice of his profession in such area for a period of not less than one year: Provided, however, that no such contract shall be made with any physician or dentist unless such physician or dentist shall be admitted to practice by the state authority having jurisdiction of such new location: Provided, further, That each such applicant subdivision shall contribute 25 per centum to the total cost of such relocation allowance, travel and transportation costs of each such physician or dentist and his family obtained by said applicant.'

"It is to be noted that this act provides:

"1. That a municipality, county or other local subdivision of government may submit an application to the Surgeon General for the relocation of a private practicing physician or dentist in the applicant subdivision.

"2. That such application must be duly approved by the State Health Department having jurisdiction over said municipality, county or other local subdivision of government.

"3. That the Surgeon General on receiving such application is authorized to enter into an agreement with a private practicing physician or dentist under which, in consideration of a relocation allowance of not to exceed $250 per month for three months and the actual cost of travel and transportation of the physician or dentist and his family and household effects to the new location, such physician or dentist agrees to move to and engage in the practice of his profession in the applicant subdivision for a period of not less than one year.

"4. That no such contract shall be made with any physician or dentist unless such physician or dentist shall be admitted to practice by the state authority having jurisdiction of such new location.

"5. That each such applicant subdivision shall contribute 25 per centum to the total cost of such relocation allowance, travel and transportation costs of each such physician or dentist and his family obtained by such applicant.

"The State Procurement and Assignment Service has already determined that certain areas in your state are in need of additional physicians and/or dentists. A list of such areas is attached. It will be helpful to the Public Health Service if you, in consultation with state chairman, Procurement and Assignment Service, will reexamine these areas as to their present status. If the need exists it is suggested that you rate them in order of urgency. Possibly the areas listed do not include all the needy communities in your state and others may have been brought to your attention which should be added.

"While the state health officer must approve the application from any community made under this act, the State Procurement and Assignment Service chairman has the responsibility of determining which physicians (or dentists) are available for relocation.

"Detailed information together with application forms for use by subdivisions wishing to apply for the relocation of physicians and dentists will be forwarded to you in the near future.

"Similar letters are being sent by the Central Board, Procurement and Assignment Service, to the chairmen of the State Procurement and Assignment Service advising them of the availability of these funds for relocation purposes.

"Your cooperation is solicited in bringing this legislation to the attention of eligible communities."

HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quotas allotted by the Procurement and Assignment Service:

(Continuation of list in THE JOURNAL, January 15, p. 167)

MASSACHUSETTS

Memorial Hospital, Worcester. Capacity, 215; admissions, 7,347. Dr. Winthrop B. Osgood, Superintendent (2 interns).

NEW JERSEY

Holy Name Hospital, Teaneck. Capacity, 226; admissions, 4,843. Dr. F. C. McCormack, Medical Director (5 interns).

St. Mary's Hospital, Orange. Capacity, 160; admissions, 3,742. Sister M. Antoinette, Superintendent (interns).

NEW YORK

Jewish Hospital, Brooklyn. Capacity, 661; admissions, 13,892. Dr. M. Hinenburg, Executive Director (assistant resident—pathology).

NORTH CAROLINA

Watts Hospital, Durham. Capacity, 225; admissions, 5,821. Mr. Sample B. Forbus, Superintendent (residents—medicine, urology).

OHIO

Good Samaritan Hospital, Dayton. Capacity, 350; admissions, 7,999. Sister Frances Maria, Administrator (2 interns, 2 residents).

PENNSYLVANIA

Mercy Hospital, Altoona. Capacity, 180; admissions, 3,867. Mother M. Otillia, Superintendent (interns).

South Side Hospital, Pittsburgh. Capacity, 225; admissions, 5,227. Miss Gertrude L. Heatley, R.N., Superintendent (interns).

TENNESSEE

Nashville General Hospital, Nashville. Capacity, 305; admissions, 6,138. Mr. W. Dortch Wood, Hospital Administrator (3 interns, 1 resident—medicine).

WASHINGTON

Pierce County Hospital, Tacoma. Capacity, 239; admissions, 2,776. Dr. Burton A. Brown, Medical Superintendent (interns).

MISCELLANEOUS

RECOMMENDATIONS OF NATIONAL RESEARCH COUNCIL RESTRICTING USE OF QUINIDINE

An acute shortage of quinidine exists in the United States today, and possibilities for replacement of present supplies are negligible. It is imperative, therefore, to reduce the use of this important drug and to limit its employment to the treatment of certain cardiac arrhythmias in which experience has shown it to be of special, often critical, value. The problem of conserving supplies of quinidine has been studied by the Committee on Drugs and Medical Supplies of the National Research Council and its Subcommittee on Essential Drugs and by the Committee on Medicine and its Subcommittee on Cardiovascular Diseases. The following recommendations have been made:

It is recommended that quinidine be limited to the treatment of heart disease on prescription of a person licensed to practice medicine and surgery in the state. That this quinidine is to be used for the treatment of heart disease should be certified by the prescribing physician.

It is further recommended that quinidine should not be combined with other drugs and prepared fixed formulas.

Criteria for the use of quinidine during the period of shortage should be limited to:

1. Ventricular tachycardia diagnosed electrocardiographically.
2. Congestive heart failure that appears definitely to have been precipitated by the sudden onset of auricular fibrillation (if not adequately controlled by digitalis).
3. Persistent premature ventricular contractions in patients who have had acute coronary artery occlusion.
4. Chronic disease of the heart associated with paroxysmal auricular fibrillation, paroxysmal auricular tachycardia or auricular flutter.
5. A history of systemic embolization in a case of paroxysmal or established auricular fibrillation.

Prescription of quinidine should be limited to not more than fifty 3 grain tablets for any acute attack of arrhythmia fulfilling one of the foregoing criteria, and to not more than thirty 3 grain tablets per week for the purpose of maintaining sinus rhythm after quinidine has reestablished it.

WARTIME GRADUATE MEDICAL MEETINGS

Additional subjects and speakers for Wartime Graduate Medical Meetings have just been announced:

At Camp Shanks, Orangeburg, N. Y.: Management of Peripheral Nerve Injuries, Dr. Bronson S. Ray, March 2; Treatment of Anorectal Diseases in the Army, Dr. Frank C. Yeomans, March 16; Fractures, Dr. Clay Ray Murray, March 30.

At Camp Upton, New York: Disordered Action Heart, Dr. B. S. Oppenheimer, February 7; Deficiency States and Their Recognition, Dr. H. D. Kruse, February 14.

At the Mason General Hospital, New York: Disordered Action Heart, Dr. B. S. Oppenheimer, February 7; Deficiency States and Their Recognition, Dr. H. D. Kruse, February 14.

PERSONNEL NEEDED

The Budget Bureau, after due consideration of the growing seriousness of personnel shortages at the Veterans Administration, has granted the veterans' agency an A-1 personnel priority so as to increase its ability to meet growing activities caused by war conditions and loss of personnel. This action of the Budget Bureau places the Veterans Administration in the same priority category as the War and Navy departments in ability to recruit personnel which are necessary to meet present shortages and to permit the expansion required by its growing obligations to the veterans and their families.

The Veterans Administration with increased responsibilities has lost over 6,200 of its personnel to the armed forces—more than 25 per cent of the male employees—in spite of its greater volume of work, caused by the discharge of men from the armed services. General Hines expressed the hope that thousands of veterans who have been discharged from service in the present war will apply for the vacant jobs, thus rendering assistance to their comrades and families. About 1,000 such veterans have already been appointed in the Veterans Administration, but there is need for many more. An expansion of rating boards, which determine the character of a veteran's disability and make the award of pensions, has been in progress for some time. Doctors, rating specialists and occupational specialists are needed for key positions on these boards.

There has been an acute shortage in hospital attendants, making necessary the detail of more than 1,000 soldiers from the Army to aid in meeting this emergency. Stenographers and clerical workers are also in great demand. Applications for jobs outside Washington should be made to the manager of the nearest Veterans Administration Facility or field station.

CHANGE IN MAIL RULES FOR PRISONERS OF WAR

Parcels for prisoners of war held in camps in this country should be addressed to the camps, according to Ernest J. Kruetgen, Chicago postmaster. In the past they have been addressed "Via New York."

Letters or cards to camps either in this country or in enemy occupied countries should be continued to be addressed to New York. Postmaster Kruetgen also said that when the name of the addressee is near the top of the envelop the cancellation may obliterate the writing. The addressee's name and address should be placed in the lower right hand portion of the envelop.

Air mail service to prisoners of war in Europe is available at the rate of 30 cents for each half ounce or fraction. This does not include Italy, where no service is available.

OPA ANNOUNCES NEW CEILING PRICES OF EAR AND ULCER SYRINGES

The Office of Price Administration announced recently reductions in the ceiling prices of ear and ulcer syringes and double end bulbs made of neoprene. Previously all neoprene double end bulbs and ear and ulcer syringes had differentials of natural rubber bulbs of 5 cents each, regardless of size. The new differentials are 3 cents each for such bulbs and syringes under 3 ounces in size, and 4 cents for the 3 ounce size. The differential of 5 cents each is continued for the 4 ounce size of these bulbs. These prices will remain in effect until June 30, 1944.

HEALTH UNDER HITLER

It is reported from Paris that Scapini has given details to the press concerning the replacement of doctors, dentists' and chemists in prisoners' camps which started in July 1942, according to the November 13 Vichy Home Service. More than 500 members of the three professions have already gone to Germany, in part replacement of 900. The return of those sent a year ago, to replace their comrades, has to be provided for. Because of these difficulties the authorities have decided to appeal to the Corps de Santé civil to complete the replacement. This corps numbered 30,000 practitioners before the war and can offer efficient help in this work of comradeship. Emphasis was laid on the moral character of this undertaking.

L'Action française of Nov. 20, 1943 (France) states that, after long research, Borsakovski, an engineer, succeeded in incorporating into wheat flour an intermediate husk, very rich in vitamins, diastases and mineral salts, the separation of which from the outer purely cellulose, valueless and indigestible husk has been up till now impossible. Despite present difficulties Jean Couturier, a miller at Montbrisen (Loire), has altered existing equipment and installed new machines. The new flour, which is 97 per cent assimilable, gave excellent results in sanatoriums on a feeding up diet. By decision of the minister of health, the flour thus produced by Couturier is reserved for hospitals, maternity homes and sanatoriums pending large scale manufacture.

ORGANIZATION SECTION

OFFICIAL NOTES

SIXTH ANNUAL CONGRESS ON INDUSTRIAL HEALTH

The sixth Annual Congress on Industrial Health, sponsored by the Council on Industrial Health of the American Medical Association, will be held Tuesday and Wednesday, February 15 and 16, at the Palmer House in Chicago. This meeting follows directly after that of the Congress on Medical Education and Licensure. Physicians and others interested in industrial health are cordially invited. There is no registration fee. The preliminary program is as follows:

TUESDAY, FEBRUARY 15—OPENING SESSION, 10 A. M.

Report of the Council on Industrial Health
STANLEY J. SEEGER, M.D., Chairman, Texarkana, Texas
Industrial Health—A Restatement of Objectives
JAMES E. PAULLIN, M.D., Atlanta, Ga.
President, American Medical Association
Preventive Medicine—Its Importance in Medical Education and Practice
JAMES STEVENS SIMMONS, Brigadier General, M. C., Washington, D. C.
Chief, Preventive Medicine Division of Office of Surgeon General, U. S. Army
Panel—Postwar Industrial Health
Moderator—R. L. SENSENICH, M.D., South Bend, Ind.
Participants:
HARVEY BARTLE, M.D., Philadelphia
Council on Industrial Health
President, American Association of Industrial Physicians and Surgeons
SIDNEY R. GARFIELD, M.D., Oakland, Calif.
Permanente Foundation Hospital
W. P. JACOB, Long Island City
National Association of Manufacturers
NEVILLE PILLING, Chicago
Zurich Insurance Companies
J. G. TOWNSEND, M.D., Bethesda, Md.
U. S. Public Health Service
ROBERT J. WATT, Washington, D. C.
International Representative, American Federation of Labor
BALLROOM

TUESDAY—AFTERNOON SESSION, 2 O'CLOCK

New Developments in Occupational Medicine—Aviation
DAVID N. W. GRANT, Major General, Washington, D. C.
The Air Surgeon, U. S. Army
An Institute of Industrial Health—Plans of a Proposed Development in the Medical Science Center of Wayne University
EDGAR H. NORRIS, M.D., Detroit
Dean, Wayne University College of Medicine
A Visual Service for Small Manufacturing Plants
HARRY S. GRADLE, M.D., Chicago
Medicine, Labor and Industry Join Hands in Philadelphia
CHARLES-FRANCIS LONG, M.D., Philadelphia
Chairman, Commission on Industrial Health and Hygiene, Medical Society of the State of Pennsylvania
The Conquest of Tuberculosis in Industry
HERMAN E. HILLEBOE, Washington, D. C.
Senior Surgeon, Medical Officer in Charge, Tuberculosis Control Section, States Relations Division, U. S. Public Health Service
BALLROOM

TUESDAY—EVENING SESSION, 6:30 O'CLOCK

STATE SOCIETIES DINNER AND ROUND TABLE

An informal dinner and round table discussion intended primarily for the personnel of committees on industrial health in state and county medical societies, will be held.
CRYSTAL ROOM

WEDNESDAY, FEBRUARY 16—MORNING SESSION, 9:30 O'CLOCK

The New Movement in Industrial Sanitation
MOHR E. SOLWORTH, Louisville, Ky.
Sanitation Consultant
Health Education for Industrial Workers
W. W. BAUER, M.D., Chicago
Director, Bureau of Health Education, A. M. A.
Maladjustment in Industry
FRANK F. TALLMAN, M.D., Lansing Mich.
Director of Mental Hygiene, State Hospital Commission
The Story of Penicillin
CHESTER S. KEEFER, M.D., Boston
Chairman, Committee on Chemotherapy and Other Agents, Division of Medical Sciences, National Research Council
The Detection and Treatment of Malnutrition Among Industrial Workers
TOM D. SPIES, M.D., Cincinnati
Associate Professor of Medicine, University of Cincinnati College of Medicine
BALLROOM

WEDNESDAY, FEBRUARY 16—MORNING SESSION, 9:30 O'CLOCK

SYMPOSIUM ON MEDICAL SERVICE UNDER WORKMEN'S COMPENSATION

Medical Developments in Workmen's Compensation—1943
J. W. HOLLOWAY JR., Chicago
Director, Bureau of Legal Medicine and Legislation, A. M. A.
The Interdependent Problems of the Administrator and the Industrial Physician
MRS. EMMA SANBORN TOUSANT, Boston
President, International Association of Industrial Accident Boards and Commissions
Disability Evaluation—The Solution in Wisconsin
VOYTA WRABETZ, Madison, Wis.
Chairman, Industrial Commission of Wisconsin
Is the Present System of Occupational Disease Coverage Adequate?
RUTHERFORD T. JOHNSTONE, M.D., Los Angeles
Second Injury Funds
J. DEWEY DORSETT, New York City
Assistant General Manager, Association of Casualty and Surety Executives
Supervising Standards of Medical Service for the Injured Workman
D. J. GALBRAITH, M.D., Toronto
Vice Chairman, Ontario Workmen's Compensation Board
CRYSTAL ROOM

WEDNESDAY—AFTERNOON SESSION, 2 O'CLOCK

SYMPOSIUM ON THE REHABILITATION AND REEMPLOYMENT OF THE DISABLED

The Present Status of Rehabilitation in the U. S. Army
FRED W. RANKIN, Brigadier General, U. S. Army, Washington, D. C.
Chief Consultant in Surgery
W. E. BARTON, Major, M. C., Washington, D. C.
Director, Reconditioning Division
Vocational Training and Placement of the Veteran
FRANK T. HINES, Brigadier General, Washington, D. C.
Administrator, Veterans Administration
State Plans for Rehabilitation
MICHAEL J. SHORTLEY, Washington, D. C.
Director, Office of Vocational Rehabilitation, F. S. A.
The Place of the Compensation Insurance Carrier in the Field of Rehabilitation
B. E. KUECHLE, Wausau, Wis.
Vice President and Claim Manager, Employers Mutual Liability Insurance Company of Wisconsin
Current Developments Affecting the Physician's Role in Manpower Utilization
CLIFFORD KUH, M.D., Richmond, Calif.
Permanente Hospitals, Kaiser Shipyards
BERT HANMAN, San Francisco
Regional Staff, War Manpower Commission
Community Organization for Rehabilitation and Reemployment
HAROLD VONACHEN, M.D., Peoria, Ill.
Medical Director, Caterpillar Tractor Company
BALLROOM

WEDNESDAY—AFTERNOON SESSION, 2 O'CLOCK

SYMPOSIUM ON WOMEN IN INDUSTRY

(Arranged by the Committee on the Health of Women in Industry, Section on Obstetrics and Gynecology, American Medical Association)

Report of the Committee on the Health of Women in Industry
H. CLOSE HESSELTINE, M.D., Chicago
Chairman, Committee on Health of Women in Industry
Protection for Industrial Women—Progress and Prospects
MISS MARY ANDERSON, Washington, D. C.
Director, Women's Bureau, U. S. Department of Labor
Why Do Women Stay Away from Work?
C. O. SAPPINGTON, M.D., Dr.P.H., Chicago
Industrial Health Consultant
A Practical Industrial Health Program for Women
FRED B. WISHARD, M.D., Anderson, Ind.
Medical Director, Delco-Remy Division, General Motors Corporation
Discussion Leaders:
FREDERICK H. FALLS, M.D., Chicago
Professor of Obstetrics and Gynecology, University of Illinois College of Medicine
JENNINGS C. LITZENBERG, M.D., Minneapolis
Professor Emeritus Obstetrics and Gynecology, University of Minnesota Medical School
GOODRICH C. SCHAUFFLER, M.D., Portland, Ore.
Associate Clinical Professor of Obstetrics and Gynecology, University of Oregon Medical School
CRYSTAL ROOM

EMERGENCY MATERNITY AND INFANT CARE PROGRAM

Statement of Administrative Policies

The following statement of administrative policies, as revised in December 1943, has been prepared by the Children's Bureau for the information of the state health agencies administering emergency maternity and infant care programs and of individuals or other agencies concerned with the provision of services under this program.

The Children's Bureau will use these policies as the basis for approval of the related portions of state emergency maternity and infant care plans for the fiscal year 1945, and of revisions, amendments or supplements to emergency maternity and infant care plans received during the remainder of the fiscal year 1944. State health agencies may amend their emergency maternity and infant care plans now or at any time during the current fiscal year in accordance with these revised policies.

The administrative policies of the Children's Bureau have been developed within the framework of the Congressional acts and the regulations of the Secretary of Labor, and in accordance with the intent of Congress as shown by the legislative history and interpreted by the bureau and by the Solicitor of the Department of Labor. In the light of the experience of the state health agencies and with the advice of the bureau's professional advisory committees, many modifications of policy have been made. Recommendations made at the conference of official representatives of the servicemen and of medical organizations, held at the Children's Bureau on Dec. 10 and 11, 1943, have been considered carefully in reaching decisions as to these policies. A supplemental statement of policy will be issued on health supervision of infants after further conferences with administrative agencies (see Note, Health Supervision of Infants) and, as experience indicates, on other subjects.

I. INDIVIDUALS FOR WHOM EMIC SERVICES MAY BE AUTHORIZED

1. Any woman applying for care whose husband, at the time of initial application,[1] was in the 4th, 5th, 6th or 7th pay grade of the United States Army, Navy, Marine Corps or Coast Guard (including enlisted men in these grades who are deceased or missing in action).

2. Any infant under 1 year of age for whom an application[1] is made whose father at the time of application was in the 4th, 5th, 6th or 7th pay grade of the United States Army, Navy, Marine Corps or Coast Guard (including men in these grades who are deceased or missing in action).

II. CONDITIONS UNDER WHICH SERVICES MAY BE AUTHORIZED

1. The individual for whom services are authorized is the wife or infant of an enlisted man in the 4th, 5th, 6th or 7th pay grade of the armed forces of the United States.

2. There shall be no financial investigation or means test to determine eligibility as a condition of receiving any service provided under the EMIC program.

3. Similar service is not readily available (without financial investigation and without cost to the patient) from the medical personnel or hospitals of the United States Army, Navy or Public Health Service or from clinics or conferences or other services provided by or through state or local public health agencies or services available under state crippled children's programs.

4. The wife of an enlisted man may have free choice under the program of all types of available facilities and services, including private practitioners, clinics, hospitals and other health facilities that meet the standards established under a state plan for each type of service or facility.

5. The attending physician has the qualifications, and the hospital meets the standards established under the state plan.

6. The attending physician or clinic has agreed to accept payment only from the state health agency for whatever medical or surgical services he renders during pregnancy, labor and six weeks post partum or for the care of an infant for which authorization has been issued under the state program. (See section IV for types of service that may be authorized.)

7. The hospital, if hospital care is requested, has agreed to accept payment only from the state health agency for services rendered during a period of authorized hospital care under the program and will agree to provide at least ten days' care following delivery if accommodations are available and if the patient wishes to remain in the hospital.

8. The hospital will provide whatever accommodations are indicated by the patient's medical condition at the per diem rate paid by the state health agency.

9. Physicians' services will not be authorized if the patient or some one in behalf of the patient is to pay for hospital care; and hospital care will not be authorized if the patient or some one in behalf of the patient is to pay the physician for medical care.

10. The cost of medical services in a clinic and/or hospital, including maintenance and salaries, where such medical service is provided by staff physicians (such as interns, resident staff and attending physicians employed full time or part time by the clinic or hospital or other physicians supervising or assisting interns or resident physicians) must be included in the cost per clinic visit and the hospital cost per patient day as outlined in the Children's Bureau memorandum of Sept. 1, 1943, "Purchase of Hospital Care Under Programs for Maternal and Child Health and Crippled Children."

11. Individuals accepted for care under the program will be referred routinely to local public health agencies for the provision of public health-nursing services that can be made available.

12. Arrangements will be made to utilize community facilities, including appropriate social and health agencies, to meet the needs of mothers and infants that cannot be provided under the EMIC program.

DISCUSSION

The emergency maternity and infant care program has been established to provide maternity and infant care to the wives and infants of enlisted men in the four lower pay grades regardless of where they are living, through the development of an organized plan, under the jurisdiction of the state health agency, with a view to making the care provided under the Congressional act available and accessible to all wives who wish to apply for their own care or care of their infants.

The emergency maternity and infant care program is to supplement and not to replace existing facilities for care, which may be available without cost and without financial investigation to enlisted men's wives or infants.

The Congress has made it clear that the care is to be provided as a service to which the wife and infant of an enlisted man are entitled without financial investigation, and that the program is intended to provide the care, if requested by or for the wife or infant of any enlisted man in the four lower pay grades, in order to relieve the enlisted man and his wife of any uncertainty as to how the cost of care will be met and to assure them that care will be provided.

The quality of care should be the best available. To help accomplish this the state health agencies must establish standards for the selection of physicians, nurses, hospitals and clinics providing care, make available consultation services by specialists and other special services, wherever available, and endeavor in every manner possible to maintain recognized high standards of care for mother and child. Quality of care implies that the fullest possible consideration be given to the needs of each patient and that all community resources be mobilized to meet social as well as medical needs.

In order to relieve the enlisted man and his wife of all anxiety with regard to how the cost of care will be met, the state agency, when authorizing medical or hospital care, assumes full responsibility for the payment for such services in accordance with the rates established under the program.

If a physician were to request authorization for hospital care under the program and arrange with the patient to pay him for her medical care, or if he were to request authorization for medical care when the patient is to pay for hospital care, or if a physician or hospital were to charge the patient an amount in addition to that paid by the state agency, it would nullify the Congressional objective of providing care without cost to the enlisted man or his family.

1. If an enlisted man in one of the four lower pay grades, for whose wife or infant application for care has been made, is discharged or promoted after the date of application, or his wife or infant moves to another state or changes physicians, his wife or infant can continue to receive services available under the plan. For purpose of eligibility, the date of application is the date when an application for care is received by the state (or local) health agency, whether on official forms or by letter or by telephone. If application was made by telephone, the date of application is the date when such application was made according to the records of the state (or local) health agency.

III. APPLICATION AND AUTHORIZATION FOR CARE

A. *Application for Care.*[2]—1. For Maternity Care: Since the wife is entitled, under the program, to complete maternity care, application for care should be made by her or in her behalf as early in pregnancy as possible, directly to the state or local health agency on forms provided for the purpose, or, in an emergency, by letter or telephone.

2. For Infant Care: Similarly, application for care of the infant should be made by the mother, or other person in behalf of the infant, as soon as medical care is needed, preferably at the first visit to physician, clinic or hospital.

NOTE.—On receipt of the application, whether complete or incomplete, the state (or local) health agency should assume responsibility for planning for local services and care as needed by the applicant.

DISCUSSION

The Emergency Maternity and Infant Care Program is not simply the payment for services needed but a plan whereby the state and local health agencies assist the families of enlisted men in obtaining the medical, nursing, hospital and other services needed for maternity care of their wives and medical care of their infants, seeking the support of all community resources in meeting these needs and maintaining the highest possible standards of care. Many of these families are unfamiliar with the resources for health and other services in the community in which they are now residing. The earlier the state and local health agencies are aware of the needs of each of these families, the better they can assist them in obtaining services needed. Early application for maternity care is therefore desirable, and every possible means should be used to inform the public about the program and to encourage wives and physicians to get applications in early.

B. *Authorization for Care.*—1. For Maternity Care: The wife should enter on the application form the date during pregnancy when she first requested care under the emergency maternity and infant care program from this physician, clinic or hospital.

The physician's statement on the application blank constitutes a "request for authorization" for the care outlined by him on the blank. Whenever possible the blank should be filled in and dated at the visit when the wife first applies to him for care under the program. The physician should check, if possible, the husband's serial number and military rank or rating, as entered on the patient's part of the form with her allowance card, letter or other information.

The wife should be responsible for sending the completed blank to the state (or local) health agency.

The "effective date of authorization" (the date from which the state health agency assumes responsibility for payment for services) shall be: The date during pregnancy when the wife first requested care under the emergency maternity and infant care program from physician, clinic or hospital; provided the application, signed by the physician, is received by the state or local health agency within six weeks after the date when the wife first requested care under the program. If not received within six weeks after the wife first requested care under the program, the "effective date of authorization" shall be a date not more than six weeks prior to the date when the application, signed by the physician, was received in the state (or local) health agency.

In cases in which the wife has made one or more visits to the physician, clinic or hospital before she requests care under the program, and the application, signed by the physician, is received by the state health agency late in the wife's pregnancy, the "effective date of authorization" may be an earlier date than has been defined to cover previous visits, provided a statement is submitted to the state (or local) health agency in writing that (1) establishes an acceptable reason for delay in application, such as misinformation, misunderstanding of procedure or other valid reason, (2) indicates the amount of care previously given and (3) shows that no payment has been made to the physician by or in behalf of the wife for care during the period covered by the authorization.

Application for delivery care received after the date of delivery should be approved for authorization only when supported by information indicating a medical emergency, such as a premature delivery, or a situation beyond the control of the patient, such as delay in mails, misunderstanding of procedures, misinformation or other valid reason.

2. For Infant Care: The physician's statement on the application blank constitutes his request for authorization to give care to the infant as outlined by him on the blank. The blank should be filled in and dated during, or as soon as possible after, the first visit of, or to, a sick infant. The physician should check, if possible, the husband's serial number and military rank or rating, as entered on the patient's part of the form, with her allowance card, letter or other information.

The mother, or other person applying in behalf of the infant, should be responsible for sending the completed blank to the state (or local) health agency.

The "effective date of authorization" for medical care of a sick infant shall be the date when the physician or clinic or hospital agreed to give care for the present illness, provided it is not more than ten days prior to the date when the application was received in the state (or local) health agency.

3. Emergency Care: In case of emergency, authorization for care of wife or infant may be given, provided request for authorization of such services is received by letter, telephone or telegraph within a reasonable interval of time, as defined by the state health agency, after the occurrence of the emergency.

IV. SERVICES THAT MAY BE AUTHORIZED BY STATE OR LOCAL HEALTH AGENCIES AND RATES OF PAYMENT

A. *For the Wife.*—1. Medical and Surgical Services Provided by Physicians in Private Practice:[3] This includes services to a patient who has sought and received care in the private office of a physician during the antepartum period. For this type of care, payment is to be made directly to the physician by the state health agency.

It also covers services to a patient who has sought and received care in the private practice of a physician employed full time or part time by a medical school, for which payment may be made to the medical school or to the physician depending on the customary procedure for receipt of such payments.

a. Complete maternity care: For "complete maternity care," that is, all services rendered by the attending physician: (1) to the mother during pregnancy, labor and the postpartum period from the effective date of authorization until six weeks after termination of pregnancy, including office treatment of intercurrent conditions whether attributable to pregnancy or not, but excluding home or hospital care of conditions not attributable to pregnancy (as outlined under b and c) and (2) to the infant during the first two weeks of life: The rate of payment as established by the state health agency, but not to exceed $50.

When fewer than seven antepartum examinations are made, when no postpartum examination is made or when other services recognized as part of routine complete maternity care are omitted, the rate of payment for complete maternity care is to be adjusted to cover only the services actually rendered. When an obstetrician refers an infant to a pediatrician for routine care during the first two weeks of life, no reduction need be made in the rate of payment to the obstetrician for "complete maternity care."

In exceptional cases additional payments for attending physicians' services may be authorized by the state (or local) health agency for continuing care of the mother beyond six weeks post partum for a serious, acute complication resulting from pregnancy, such as puerperal infection.

(For rates of payment see item c).

b. Major nonobstetric intercurrent surgical operations: Additional payments may be authorized by the state (or local) health agency to attending physicians who qualify as consultants (for qualifications of consultants see section IV, 2) in a surgical specialty, for major, nonobstetric surgical operations needed during pregnancy and six weeks post partum for conditions not attributable to pregnancy (such as appendectomy during pregnancy) at a rate established by the state health agency not to exceed a total of $50 for preoperative, operative and postoperative care.

c. Medical care of other intercurrent nonobstetric conditions: Additional payments for attending physicians' services (for a period of three weeks with review by the state or local health agency before authorizing an extension of care) may be authorized by the state (or local) health agency during pregnancy

2. Application blanks and full information about the program should be available readily in physicians' offices, clinics, hospitals, Red Cross chapters, local health and welfare agencies, and from local public health nurses. Application blanks have two parts: (1) the wife's statement and (2) the physician's statement. On obtaining a blank the wife should fill out her part, take it to a physician (in office or clinic) and ask him to fill out his part. She should then send it herself immediately to the state (or local) health agency. The date when the application, including the physician's statement, is received at the state (or local) health agency is important in establishing the date when the cost of care is assumed by the state health agency. However, even though prompt completion of the application is important, the wife should not delay sending in her part of the application if for some reason the physician's statement cannot be filled out at once or other information cannot be obtained. In this case a second application blank must be used by the physician when he fills out his request for authorization.

3. For services of consulting specialists, see section C, item 1.

and six weeks post partum for the home or hospital treatment of intercurrent conditions not attributable to pregnancy, which do not require major surgery at weekly rates of payment for medical care as established by the state health agency, but not to exceed $12 for the first week of illness and, if fewer than four home or hospital visits are made during the week, proportionate payment to be made for services rendered; for succeeding weeks of illness not to exceed $6 a week, and, if fewer than three home or hospital visits are made during a week, proportionate payment to be made for services rendered.

d. Antepartum care only, or spontaneous abortion: When only antepartum care is provided by the attending physician, at a rate of payment established by the state health agency but not to exceed $15 for care during the antepartum period. If fewer than seven antepartum visits are made, proportionate payment to be made for services rendered.

If pregnancy terminates in spontaneous abortion not requiring an operation, at a rate of payment not to exceed $15, plus proportionate payment for antepartum visits made.

e. Therapeutic abortions: For therapeutic abortions or spontaneous abortions requiring an operation including preoperative and postoperative care, the rate of payment will not exceed that established by the state health agency for care during labor and six weeks post partum.

f. Ectopic pregnancy: For treatment of ectopic pregnancy including preoperative and postoperative care, when laparotomy is performed by attending physician, rate of payment will not exceed the rate established by the state health agency for "complete maternity care."

g. Care of newborn infant by pediatrician: Routine care of newborn infant for first two weeks by a qualified pediatrician when infant is referred by obstetrician who does not customarily provide routine care of infants, at a rate established by the state health agency not to exceed $6 per week. If fewer than three visits to the infant per week are made by the pediatrician, proportionate payment to be made for services rendered.

2. Hospital Care During Pregnancy, Labor or Within Six Weeks After Termination of Pregnancy: Authorization may be made for a maximum of fourteen days (with extension of care authorized, when necessary, for two week periods, after review by the state or local health agency) with payment at the "per diem rate" established for payments to the hospital by the state health agency times the number of days' stay in the hospital (in accordance with the Children's Bureau memorandum of Sept. 1, 1943, "Purchase of Hospital Care Under Programs for Maternal and Child Health and Crippled Children").

3. Medical and Surgical Services Provided Through Clinics [4] and Hospitals: When a patient has sought and received care in a clinic or hospital, the payments to the clinic or hospital will cover payments of the cost (including maintenance and salaries) of all medical services provided by interns, residents or other physicians employed part time or full time by the clinic or hospital and by the physicians supervising or assisting the interns or resident physicians, as well as payment for all other services provided by the clinic or hospital, as follows:

a. For clinic services (other than state or local health agency clinics): At rates not to exceed the cost per clinic visit times the number of clinic visits and not to exceed the maximum rate established by the state health agency.

b. For hospital services: The "per diem rate" established for payments to the hospital by the state health agency times the number of days' stay in the hospital (in accordance with the Children's Bureau memorandum of Sept. 1, 1943, "Purchase of Hospital Care Under Program for Maternal and Child Health and Crippled Children").

c. For clinic and hospital service: Many hospitals have an inclusive flat rate covering outpatient and inpatient medical and hospital maternity care. This flat rate may be paid if it does not exceed the total of *a* and *b*.

B. *For the Infant.*—1. Medical and Surgical Services for Sick Infant Provided by Physicians in Private Practice: [5] This includes care that has been sought on behalf of, and received by, a sick infant in the private practice of a physician (home, hospital or office) during the infant's first year of life. For this type of care payment is to be made directly by the state health agency to the physician. It also covers care sought on behalf of, and received by, a sick infant in the private practice of a physician employed full time or part time by a medical school, payments for which may be made to the medical school or to the physician depending on the customary procedure for the receipt of such payments.

Medical care may be authorized for a period not to exceed three weeks, with review by the state health agency before authorizing extension of care.

a. Medical care, including minor surgery: At weekly rates established by the state health agency but not to exceed $12 for the first week of illness, and, if fewer than four visits for examination or treatment are made during the week, proportionate payment to be made for services rendered. For succeeding weeks of illness $6 and, if fewer than three visits for examination or treatment are made in any week, proportionate payment to be made for services rendered.

b. Major surgery: Additional payments may be authorized by the state health agency to attending physicians who qualify as consultants (for qualifications for consultants see section IV, 2) in a surgical specialty, for major surgical operations performed on infants under their care (exclusive of care for which infants are eligible under state crippled children's programs), at rates of payment to be established by the state health agency but not to exceed a total of $50 for preoperative, operative and postoperative care.

2. Hospital Care: Hospital care during the first year of life may be authorized for fourteen days (with extension of care authorized, when necessary, for two week periods after review of case by state or local health agency): At the "per diem rate" established for payments to the hospital by the state health agency times the number of days' stay in the hospital (in accordance with the Children's Bureau memorandum of Sept. 1, 1943, "Purchase of Hospital Care Under Programs for Maternal and Child Health and Crippled Children").

3. Medical and Surgical Services Provided Through Clinics and Hospitals: When care of a sick infant has been sought and received in a hospital or clinic, the payments to the clinic or hospital will cover payment for the cost (including maintenance and salaries) for all medical services provided by interns, residents and other physicians employed part time or full time by the clinic or hospital and by physicians supervising or assisting interns or resident physicians, as well as payment for all other services provided by the clinic or hospital, as follows:

a. For clinic services: At a rate not to exceed the cost per clinic visit times the number of clinic visits and not to exceed the maximum rate established by the state health agency.

b. For hospital services: The "per diem rate" established for payments to the hospital by the state health agency times the number of days' stay in the hospital (in accordance with the Children's Bureau memorandum of Sept. 1, 1943, "Purchase of Hospital Care Under Programs for Maternal and Child Health and Crippled Children").

4. Immunizations in Physicians' Offices, at Child Health Conferences or Immunization Clinics Not Conducted by State or Local Health Agencies: [6] At rates established by the state health agency but not to exceed $6 total for immunization for smallpox, diphtheria and whooping cough (plus the cost of biologic products in states where these are not provided without cost by the state or local health agencies). These immunizations usually will require, during the first year of life, one procedure for smallpox, two or three for diphtheria and three for whooping cough. If immunizations for all three diseases are not completed, proportionate payment is to be made for services rendered.

NOTE.—*Health Supervision of Infants.*—In child health conferences: Health supervision of infants may be arranged for in child health conferences made available by state or local health agencies or by voluntary health agencies. For the present, the cost of health supervision through conferences may be met from Maternal and Child Health funds made available under title V, part 1, of the Social Security Act.

Administrative problems relative to the inclusion under the Emergency Maternity and Infant Care program of health supervision of infants in physicians' offices are now being studied by the Children's Bureau and will be reviewed in the near future with state and local officials responsible for the administration of the program. These problems include the desirable minimum requirements of training and experience to be established for physicians providing health supervision of infants and the methods of authorizing and making payments for such supervision provided in physicians' offices. When decisions with respect to payment for health supervision of infants are reached, a supplement to this statement of policy will be issued.

It is recommended, therefore, that authorization for health supervision of infants, except for immunizations, not be given under the Emergency Maternity and Infant Care program until the Children's Bureau policy on these matters has been made available to state administrative agencies.

4. No authorization would be issued, nor payments made, for antepartum care given in antepartum clinics conducted by state or local public health agencies. However, authorization for hospital care planned for through such a clinic would be necessary and should be requested by the physician in the clinic.

5. For services of consulting specialists, see section C, item 1.

6. No authorization would be needed, nor payment made, for immunizations at child health conferences or immunization clinics conducted by state or local public health agencies.

C. *For the Wife or Infant.*—1. Consultation Services Requested by Attending Physician (from consultants on list approved by the state health agency): a. Long distance telephone consultation: The actual cost of the call.

b. Bedside consultation or assistance or minor surgery: At the rate of payment established by the state health agency but not to exceed $10 per consultation.

c. Consultation which includes performance of a major surgical operation by the consultant and for the preoperative and postoperative care provided by the consultant: At the rate of payment established by the state health agency but not to exceed $50.

2. Bedside Nursing Service in Home or Hospital, When Requested by Attending Physician, for Wife or Infant Receiving Care Under EMIC Program: a. In a hospital by graduate nurses: Special nursing services during a period of critical illness when such nursing services cannot be provided by nurses employed by the hospital and when no expenditures for special nursing service have been included in the hospital's annual statement of operating expense may be authorized for a period not to exceed four days, with review by state (or local) health agency before authorizing extension of care, at prevailing local hourly or per diem rates not to exceed maximum rate established by state health agency.

b. In the home by nursing staff of a voluntary public health or visiting nurse agency or by graduate nurses (when such nursing services cannot be made available by state or local public health agencies): (1) Visits for care of mother and infant while the mother is receiving bed care during the puerperium may be authorized not to exceed six visits, with review by state health agency, before authorizing extension of care, at prevailing local rates per visit but not to exceed the maximum rate established by the state health agency.

(2) Visits for care of a sick mother or infant may be authorized not to exceed fourteen visits with review by the state health agency, before authorizing extension of care, at prevailing local rates per visit but not to exceed the maximum rate established by the state health agency.

(3) Nursing care throughout the period of labor and delivery may be authorized at prevailing local rates but not to exceed maximum rate established by state health agency.

(4) Special nursing services on an hourly or per diem basis during a period of critical illness may be authorized for a period not to exceed four days, with review by a state health agency before authorizing extension of care, at prevailing local rates not to exceed the maximum rate established by the state health agency.

(5) Visits for care of a patient who has complications, in order to carry out specific orders by the physician, such as determining blood pressure, urinalysis or giving special treatments or medications may be authorized not to exceed six visits, at prevailing local rates per visit but not to exceed the maximum rate established by the state health agency.

3. Blood for Transfusions: This may be authorized at the customary minimum rate paid by the hospital but not to exceed the maximum rate established by the state health agency.

4. Ambulance Service: When requested by attending physician or hospital, ambulance service may be authorized at prevailing local rates not to exceed the maximum rate established by the state health agency.

5. Additional Payment for Time in Travel and for Cost of Travel to Attending Physician or Consultant: This may be authorized for attending seriously ill patients or for home deliveries, outside of city limits of physician's residence, at rates established by the state health agency, not to exceed 25 cents per mile each way traveled outside the city limits, with maximum payment of $25 to a physician for travel for any 1 case.

6. Additional Payment for Cost of Travel of Graduate Nurse: Additional payment to a graduate nurse not employed by a public or voluntary health agency to the home of a patient may be allowed at the cost of transportation outside city limits on a public carrier or at the usual rate for mileage established for state employees.

DISCUSSION

The appropriation act for emergency maternity and infant care states that the funds are to be used to provide medical, nursing and hospital maternity and infant care. Review of the discussions in Congress clearly indicates that it has been the intent of Congress to provide as complete and as satisfactory medical, nursing and hospital care during the maternity period and the first year of the infant's life as is possible to obtain. To supplement when necessary the care usually recognized as required for the uncomplicated maternity case or for the sick infant, special additional care needed for complications or serious illness is therefore included under the program. This includes, as necessary, consultation and diagnostic assistance of specialists, which should be made as freely available as possible under the program, prolonged hospital care, special nursing service, and special therapeutic measures such as blood for transfusion when applied for by the attending physician, clinic or hospital during the period when care has been authorized.

Calling a consultant should not affect the rate of payment to the attending physician if he continues to provide care to the patient.

V. QUALIFICATIONS FOR PHYSICIANS AND NURSES PARTICIPATING IN THE PROGRAM

1. *For Obstetric Services.*—Qualifications required of practitioners performing obstetric services under the program shall be established by each state health agency.

2. *For Medical Services Other Than Obstetric.*—Graduates of medical schools approved (at time of graduation or subsequent to graduation) by the Council on Medical Education and Hospitals of the American Medical Association. Individual exceptions may be made when a person with the degree of doctor of medicine who is not a graduate of a medical school approved (at time of graduation or subsequent to graduation) by the Council on Medical Education and Hospitals of the American Medical Association has completed postgraduate training which, in the opinion of the state health officer and his technical advisory committee, makes him competent to participate in this program.

Additional Qualifications for Consultants.—Specialists who are certified by their respective American boards of medical specialties, or whose training and experience meet the requirements of training and experience for admission to the examinations of such boards, should be designated as consultants by the state health departments and, whenever possible, made available for bedside consultation (or telephone consultation when bedside consultation is not feasible) with physicians participating in the plan. Physicians who have had at least one year of graduate training in a residency in their specialty approved by the Council on Medical Education and Hospitals of the American Medical Association and at least one year's experience limited to the practice of the specialty may be designated as assistant consultants.

For areas where consultants with the training and experience as set forth in the preceding paragraph are not available, a state technical advisory committee, appointed by the state health agency for this program, should recommend to the state health agency a plan for providing consultation to patients living in such areas.

Lists of physicians approved by the state health agency as consultants in the various specialties should be made available to all physicians participating in the program.

3. *For Pediatric Services to Newborn Infants Referred by Obstetricians.*—Diplomates of the American Board of Pediatrics or physicians who have completed at least one year of graduate training in a pediatric residency approved by the Council on Medical Education and Hospitals of the American Medical Association.

4. *For Nursing Service Purchased on a Case Basis.*—Graduate nurses registered or eligible for registration by meeting requirements of the state board of nurse examiners and having had training and experience in maternity and/or pediatric nursing as required by the state health agency.

VI. MINIMUM REQUIREMENTS FOR HOSPITALS PARTICIPATING IN PROGRAM

The following represent minimum requirements that will be used by the Children's Bureau in reviewing state plans for approval. A state health department may use them as a basis for preliminary approval of hospitals for obstetric care, but they should not be construed as establishing even minimum standards for such hospitals.

Since in the various states wide differences will be found in hospital facilities available, some state health departments will be able to establish higher requirements than others. Each should develop a set of requirements that are as high as are practicable under existing conditions and should consider the possibility of raising the requirements as soon as possible.

Since in some states it will be practicable to establish minimum requirements that could not be met by many of the hospitals in other states, those requirements which should be considered absolutely minimum for emergency approval under any conditions have been indicated by one star (*), and those which should be established as minimum when conditions permit, either at the time of approval or later, have been indicated by two stars (**).

1. BUILDINGS

* Obstetric care shall be authorized only in buildings that meet state or local rules and regulations for fire protection and sanitation.
* Buildings shall be adequately screened to give protection against flies and mosquitoes.
* Every room in which maternity patients or newborn infants are cared for shall have at least one window to provide light and ventilation (unless forced ventilation is provided).

There is evidence that sunlight passing through ordinary window glass has some bactericidal action. Change of air content of rooms by admitting outdoor air tends to reduce the bacterial content of the air and adds to the patient's comfort.

* In every room used in the care of maternity patients and newborn infants there shall be artificial lighting adequate for the purposes for which the room is used.
* There shall be provision for adequately heating the building in cold weather, with maintenance of a fairly uniform temperature in delivery rooms and nurseries.

The shock of labor and delivery for mother and infant make provision of suitable environmental conditions essential. The newborn infant's need for artificial heat after leaving the protection of the uterus is obvious, and chilling may be fatal especially to premature infants.

2. MATERNITY UNIT

* Maternity patients and newborn infants shall be cared for only in wards or rooms completely separated from other wards or rooms in which patients with communicable diseases or septic conditions are cared for.

The special susceptibility of puerperal women and newborn infants to various types of infection is well known. The danger of cross infection will be less the greater the degree of separation of these patients from all other patients; i. e., in a separate wing, a separate floor or a room or rooms separated by a partition from that section of the hospital in which patients with septic conditions or communicable diseases are cared for.

** Maternity patients shall be cared for only in a part of the hospital in which complete separation from all other patients is possible.

a. *Facilities for Delivery*

* If there is no delivery room separate from the general operating room, patients shall be delivered in their own rooms except in case of cesarean section. There shall be conveniently located facilities for the attendants at delivery to scrub their hands.

Since the parturient woman is especially susceptible to infection, it is unwise to deliver her in a room used for septic cases regardless of the care with which cleaning of the room is carried out. Hand scrubbing facilities are essential to the use of aseptic technic.

** There shall be a properly equipped delivery room used exclusively for the delivery of noninfectious patients. There shall be running water in this room or adjacent to it.
* There shall be suitable facilities for administering general anesthesia.
* There shall be suitable apparatus for administering oxygen to infants.
* A reliable method for identifying each infant shall be applied in the delivery room.

b. *Nursing Services*

* A graduate registered nurse shall be responsible at all times for nursing care of both maternity patients and newborn infants.
** At least one graduate registered nurse shall be on duty at all times to supervise the care of both maternity patients and newborn infants.

Every puerperal woman and newborn infant needs skilled nursing care. This is essential not only for the normal needs but because of the potential danger to both from infection and hemorrhage and the danger to the infant from asphyxiation.

In addition, the nurse is the person who is responsible throughout the twenty-four hours and will often be required to make decisions vital to the patients' safety (both mother and infant) in absence of the physician.

c. *Care of Utensils and Linen*

* There shall be facilities for disinfection or, preferably, sterilization of bedpans.

Contaminated bedpans may be a source of cross infection.

* There shall be adequate and suitable receptacles for soiled linen (bed linen, gowns and diapers).

Soiled linen may, if not kept in closed containers, be a source for spread of infection.

** There shall be a utility room used for maternity patients only.

d. *Laboratory and Clinical Facilities*

* There shall be facilities in the hospital or available in the community for laboratory examinations, including blood counting, hemoglobin determinations and urinalyses.
** A separate room shall be provided in the hospital for a laboratory.
* There shall be facilities in the hospital always ready for intravenous therapy.
** There shall be serum available in the hospital for blood matching for transfusions.
* The hospital shall provide adequate facilities for sterilization of equipment, supplies and instruments.

e. *Records*

* A clinical record shall be kept for each patient, mother and infant separately.

f. *Accommodations for Patients*

1. For the mothers:

* Rooms or wards in which maternity patients are cared for shall provide average space equal to at least 60 square feet per patient.

To provide for adequate ventilation, for space for bedside care of the patient and for separation of the patients sufficient to minimize respiratory cross infections.

** Rooms or wards in which maternity patients are cared for shall provide average space equal to at least 80 square feet per patient.
* There shall be a separate bed for each patient.
** There shall be a separate thermometer and a bedpan for each patient.

Handwashing facilities:

* Running water shall be conveniently available to every room in which maternity patients are cared for.

To facilitate hand washing by staff (medical and nursing) before and after caring for each patient. Hand washing is one of the important measures for prevention of infection. The more convenient the facility, the more likely it is that the hand scrubbing will be done.

** Running water shall be available in each room or ward.

Isolation facilities:

* A room shall be available at all times in which a maternity patient who has an infection may be isolated.

Prevention of spread of infection from 1 patient to another depends on separation of the patient who is suspected of having an infection from noninfected patients and in maintaining rigid separate isolation of the infected patient until cured or, preferably, until discharged from the hospital.

** Space shall be available at all times for isolation of at least 1 patient for every 25 obstetric beds or fraction thereof.

Dietary department:

* Food adequate for the needs of the parturient women shall be prepared and served under sanitary conditions.
** If the food service is not under the direction of a qualified dietitian, consultation should be obtained from a dietitian or nutritionist available to the community.

2. For the infants:

Nursery facilities:

* If newborn infants are not kept in their mothers' rooms, a separate nursery shall be provided for them, which is used for no purpose other than the care of such infants.
* Provision shall be made to exclude visitors from contact with infants. If infants are kept in their mothers' rooms, a separate room must be made available in which to place them during visiting hours.

To prevent respiratory infections in newborn infants, they should be isolated from visitors.

* Each infant shall have a separate bassinet.

In order to minimize the danger of cross infection, 2 infants should never occupy the same bassinet, even if they are twins.

* Individual bassinets shall be separated by at least 6 inches.

Separation of bassinets is required (1) so that bedclothes from one bassinet will be less likely to come in contact with those on either side and (2) to facilitate bedside care of each infant.

** Individual bassinets shall be separated by at least 12 inches.
* Nurseries shall be large enough to provide an average of at least 16 square feet of floor space per infant.

This is the minimum space that will permit proper spacing of beds (6 inches from walls and 6 inches between beds) and that will provide space for the nurse to care for the infant.

** Nurseries shall be large enough to provide an average of at least 20 square feet of floor space per infant.

* There shall be provided for premature infants at least one incubator or some type of heated bed for each 20 bassinets for full term infants or any fraction thereof.

* There shall be provided in the nursery facilities for washing or disinfecting the hands.

To avoid carrying infection to infants the hands must be carefully washed both before and after caring for each infant.

Isolation for infants:

* There shall always be available a room in which infants who have or who are suspected of having infections may be strictly isolated from the well infants and from one another.

To prevent spread of infection, there should be provision for immediate isolation of any infants suspected of having an infection.

Clinical facilities for infants:

* There shall always be available facilities for oxygen administration suitable for use with infants.

Newborn infants, especially premature infants, are prone to respiratory difficulties. Oxygen administration is essential for combating these difficulties.

* There shall always be available either in the hospital or in the community sterile sets for intravenous or subcutaneous administration of blood or other fluid to infants.

Facilities for preparation of milk mixtures:

* There shall be suitable space and adequate equipment for preparation of milk mixtures (formulas) and for their sterilization and refrigeration.

** There shall be a separate room used exclusively for the preparation of sterile milk mixtures.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status.—A subcommittee of the Senate Committee on Education and Labor has recommended to the full committee that the Veterans' Education Bill, S. 1509, be reported favorably with certain modifications. A subcommittee of the Senate Committee on Commerce has been conducting hearings on S. 1096, a bill to establish a Bureau of Vital Records in the United States Public Health Service. Several state directors of vital statistics have testified before the subcommittee.

Bills Introduced.—S. 1616, introduced by Senator Wiley, Wisconsin, proposes to make available additional benefits for veterans of World War II in the form of vocational rehabilitation and educational benefits under the direction and supervision of the Administrator of Veterans' Affairs. S. 1633, introduced by Senator Walsh, Massachusetts, at the request of the Navy Department, proposes to amend the nurse training act so as to provide that the head of any department, establishment or other federal agency may request and accept transfers of student nurses, who are transferable under the original act, to a federal hospital operated by his agency in continental United States, exclusive of Alaska, and to provide for the continued training of such student nurses requisite to graduation. The period of training of such transferee may not extend beyond the period required for graduation by the institution from which the student nurse was transferred and may be terminated at any time prior thereto as the interests of the service may require. H. R. 3904, introduced, by request, by Representative Randolph, West Virginia, provides for the detention, care and treatment of persons suffering from diseases of the mind in certain federal reservations. H. R. 3920, introduced by Representative Fernandez, New Mexico, proposes to grant the state of New Mexico new lands for the Tingley Crippled Children's Hospital and for elementary and secondary vocational trade schools. H. R. 3935, introduced by Representative Rogers, Massachusetts, proposes an appropriation of $500,000,000 to construct additional veterans' hospitals. H. R. 3973, introduced by Representative Rogers, Massachusetts, declares the Veterans' Administration to be an agency of the United States vital and essential to the successful prosecution of the war and entitled, second only to the War and Navy Departments, to priorities in personnel, equipment, supplies and material under any laws, executive orders and regulations pertaining to priorities. The Secretary of War and the Secretary of the Navy will be authorized to transfer any personnel, whether commissioned, enlisted or inducted, from the Army or Navy respectively to the Veterans' Administration, with the proviso that, to the extent practicable, personnel so transferred should be selected from those persons not qualified for general service in combat areas. H. R. 3921, introduced by Representative Rogers, Massachusetts, is similar to H. R. 3973 in granting priorities to the Veterans' Administration but in addition directs the Administrator of Veterans' Affairs and the Federal Board of Hospitalization to expedite and complete the construction of additional hospital beds for war veterans and to enter into contracts for the use of permanently constructed Army and Navy hospitals by the Veterans' Administration after cessation of hostilities and after such institutions are no longer needed by the armed services.

STATE MEDICAL LEGISLATION

Kentucky

Bill Introduced.—H. 16 proposes to enact a separate naturopathic practice act and to create a board of naturopathic examiners to examine and license applicants for licenses to practice naturopathy. Naturopathy, according to the bill, means "Nature cure or health by natural methods" and is defined as "the prevention, diagnosis and treatment of human injuries, ailments and diseases by means of any one or more of the psychological, physical or mechanical, chemical or material, forces or agencies of Nature." Naturopaths are to be permitted to practice obstetrics if they "first comply with the requirements of the County Board of Health, by taking the required examination and obtaining a midwife license" but they are not to be authorized to "perform any surgical work other than minor matters."

New York

Bills Introduced.—A. 12 proposes so to amend the hospital lien act as to provide specifically that a hospital lien may not be asserted with respect to personal services rendered by any physician or surgeon. S. 9 proposes to enact an optical dispensing act and to create a state board of examiners in optical dispensing to examine and license applicants for licenses to practice optical dispensing, which is defined to embrace the compounding and dispensing of lenses, spectacles, eyeglasses, optical devices or other optical appliances to the intended wearer thereof on written prescriptions from licensed physicians or optometrists for the aid, correction, relief or treatment of visual or ocular anomalies of the human eye.

Rhode Island

Bills Introduced.—H. 560 proposes to extend until the adjournment of the 1945 session of the legislature the life of the special Rhode Island public health laws survey commission authorized by the legislature in 1943. H. 564 proposes to prohibit the manufacture, possession for sale, or sale of stated caustic poisons used as household chemicals unless the containers thereof bear the word POISON in heavy faced caps. The bill also proposes to prohibit the manufacture or sale of ammonia or any chlorinated form of bleaching fluid the label or package of which bears any false or misleading statements, or, in the case of ammonia, which contains less than 8 per cent of actual ammonia, or, in the case of chlorinated bleaching fluid, which contains less than 2¼ per cent of available chlorine. The bill also proposes to prohibit the manufacture and sale of chlorinated bleaching and disinfecting fluids which are artificially colored.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARKANSAS

University News.—Recent lecturers at the University of Arkansas School of Medicine, Little Rock, have included Dr. Olympio da Fonseca Jr., Rio de Janeiro, on "Malaria" and "Dermatocomycosis"; Dr. Arnold D. Welch, Glen Olden, Pa., "Recent Advances in Sulfonamide Drugs," and Dr. Irving S. Wright, New York, "Peripheral Vascular Diseases" and "Capillary Studies."

GEORGIA

Changes in the Faculty.—Dr. Robert C. Major has resigned as assistant in surgery at Emory University School of Medicine, Atlanta, to become full time professor of thoracic surgery at the University of Georgia School of Medicine, Augusta, effective January 1. Dr. John Robert Rinker, Fort Worth, has been appointed full time professor of urology at Georgia.

ILLINOIS

Crippled Children Unit in New Home.—The division of services for crippled children of the University of Illinois recently was moved into the Bressmer Home, 1105 South Sixth Street, Springfield. The administrative and accounting offices occupy the first floor, the record and file rooms, the central nursing district office and the conference room the second floor, while the third floor is now used for storage but can be furnished and used for offices if required. The service of the division is carried on through a field staff of orthopedic and public health nurses working out of district offices in Chicago, Peoria, Springfield, Champaign and Mount Vernon. These nurses plan and supervise annually some seventy orthopedic clinics at key cities in the state, which are usually attended by about 2,500 children for diagnostic and follow-up care. When the division was established in 1937 it was a unit of the department of public welfare. At the beginning of the 1941-1942 fiscal year, for administrative reasons and in accordance with an agreement between the department of public welfare, the University of Illinois and the commission for handicapped children, the division was placed under the jurisdiction of the university, which also administers the Illinois Surgical Institute for Children, a state owned and state supported institution established for the surgical care of children. The division was created as an official state agency under the Federal Social Security Act to extend and improve services for locating crippled children and to provide medical, surgical and corrective facilities for diagnoses, hospitalization and after-care for the children who are crippled or who are suffering from conditions which lead to crippling. Under the setup the division is not able to extend care to persons who have attained their twenty-first birthday. A recent development, however, has been the extension of this rule to provide that assistance may be given to persons over 21 who are victims of poliomyelitis. Twenty-five thousand dollars of the $225,000 appropriation recently approved for the current biennium has been earmarked specifically for victims of poliomyelitis without respect to age.

Chicago

Personal.—Miss Elizabeth F. Carr, librarian of the New York Post-Graduate Medical School, Columbia University, New York, has been appointed librarian of the Archibald Church Library of Northwestern University Medical School to succeed Miss Louise Walker, resigned, effective January 1. Miss Carr will begin her new position February 1.—Dr. Rafael Mendez, instructor in pharmacotherapy, Harvard Medical School, Boston, has been appointed assistant professor of pharmacology at the Loyola University School of Medicine.

Lectures on Medical Care.—Dr. Morris Fishbein, Editor of THE JOURNAL, opened a series of lectures on medical care at the University of Illinois College of Medicine, January 12, with a talk entitled "Health of the American People." The series is sponsored by the Student Council of the college of medicine and other lecturers include:

Joseph Dean Lohman, A.M., January 26, Health and the Distribution of Medical Care.
Dr. Roland R. Cross, Springfield, February 9, Preventive Medicine and Public Health.
Dr. Victor Johnson, Secretary to Council on Medical Education and Hospitals, American Medical Association, February 23, Role of Postgraduate Education in Modern Medicine.
Dr. Chauncey C. Maher, March 8, Chronic Disease and Its Implications as a Social Problem.
Lawrence J. Linck, March 22, Correlation of Medical Services with Governmental Agencies.
A. M. Simons, Assistant Director, Bureau of Medical Economics, American Medical Association April 12, Organization of Medical Services in America.
Louis Wirth, Ph.D., Plans for Medical Care.

INDIANA

Library Collection as Memorial to Dr. Hutchins.—A portion of the library of the late Dr. Frank F. Hutchins has been given by his wife, Mrs. Luella Hutchins, to the University of Indiana Medical Center, Indianapolis, to be set up in a separate library unit as a memorial to the physician who was a member of the medical school for many years. Dr. Hutchins became a member of the faculty of the State College of Physicians and Surgeons when it was organized in 1906, and when the Indiana Medical College was united with the Indiana University School of Medicine in 1908 under the name of the latter he became professor and head of the department of mental and nervous diseases. Dr. Hutchins served as a member of the committee which worked out the organization of the faculty of the two schools after study of the medical schools at Harvard, Johns Hopkins and Pennsylvania universities. He served without compensation as departmental chairman until his retirement in 1938. Dr. Hutchins died in February 1942.

Secretaries' Conference.—The Indiana State Medical Association will conduct its annual secretaries' conference at the Indianapolis Athletic Club, Indianapolis, January 23. The morning session will be devoted to a school for speakers who will talk to lay groups on the Wagner-Murray-Dingell bill, at which Dr. Homer G. Hamer, Indianapolis, will give an outline plan for speakers; Mr. Clarence A. Jackson, Indianapolis, "The ABC's of Social Security"; William Norwood Brigance, Ph.D., Crawfordsville, professor of speech, Wabash College, "Making the Speech Count," and Dr. Franklin S. Crockett, Lafayette, "Addressing Local Lay Groups." At the conference in the afternoon, the speakers will include:

Dr. Charles N. Combs, Terre Haute, Hospital Plans in Indiana.
Dr. Edward J. McCormick, Toledo, Ohio, Public Relations and the Medical Profession.
Mr. J. W. Holloway Jr., Chicago, National Legislative Problems.
Drs. Norman M. Beatty and Joseph William Wright, Indianapolis, Local Legislative Problems.
Dr. Eldridge M. Shanklin, Hammond, Your Part in Making a Better State Medical Journal.

IOWA

Dr. Mengert Goes to Southwestern Medical School.—Dr. William F. Mengert, since 1938 associate professor of obstetrics and gynecology at the State University of Iowa College of Medicine, Iowa City, has resigned to become professor and head of the department of obstetrics and gynecology at the Medical School of the Southwestern Medical Foundation, Dallas.

KENTUCKY

Committee Named to Seek Funds for Tuberculosis Sanatoriums.—The Kentucky State Medical Association has appointed a committee of three to present the needs for two tuberculosis sanatoriums in the state in a bill to the legislature asking for appropriations. The members are Drs. Carl Norfleet, Somerset, representing central Kentucky, William Clark Bailey, Harlan, representing eastern Kentucky and Carl C. Howard, Glasgow, representing western Kentucky. The state society will ask the state to appropriate $500,000 to build two sanatoriums, one in eastern Kentucky and one in western Kentucky and, in addition, $100,000 for maintaining the institutions for one year after they are built.

LOUISIANA

New Orleans Graduate Medical Assembly.—The eighth annual session of the New Orleans Graduate Medical Assembly will be held March 6-9, at which the following will participate:

Dr. Robert L. Levy, New York, Cardiology.
Dr. Carroll S. Wright, Philadelphia, Dermatology.
Dr. Walter L. Palmer, Chicago, Gastroenterology.
Dr. Robert A. Ross, Durham, N. C., Gynecology.
Dr. Ralph H. Major, Kansas City, Mo., Medicine.
Dr. Abraham Myerson, Boston, Neuropsychiatry.
Dr. John W. Harris, Madison, Wis., Obstetrics.
Dr. H. Winnett Orr, Lincoln, Neb., Orthopedic Surgery.
Dr. Chevalier L. Jackson, Philadelphia, Otolaryngology.
Dr. Paul R. Cannon, Chicago, Pathology.
Dr. Henry G. Poncher, Chicago, Pediatrics.
Dr. Louis A. Buie, Rochester, Minn., Proctology.
Comdr. Lewis Kraeer Ferguson (MC), U. S. Naval Reserve, Surgery.
Dr. George T. Pack, New York, Surgery.
Dr. Frank Hinman, San Francisco, Urology.

MICHIGAN

Annual Clinic Day.—Mount Carmel Mercy Hospital, Detroit, will conduct its annual clinic day on January 26. Dr. Louis J. Gariepy, chief of staff, and Dr. Edward Dowdle will open the program. Other speakers will include:

Dr. Harold Henderson, Detroit, The Role of the Cervix in Obstetrics.
Dr. Joseph L. DeCourcy, Cincinnati, Riedel's Struma Disease of the Thyroid Gland.
Dr. Fredrick F. Yonkman, Detroit, Some Recent Advances in Therapeutics.
Dr. Charles M. McKenna, Chicago, Interesting Anomalies of Genitourinary Tract.
Dr. Norman Charles Bender, Buffalo, Meningitis in Children.
Dr. Thomas E. Jones, Cleveland, Cancer of the Colon.
Dr. Robert A. Hittig, Ann Arbor, Tropical Diseases and Their Relation to the Postwar Period in the United States.
Drs. Frederick A. Coller and Cyrus C. Sturgis, Ann Arbor, Newer Concepts, Diagnosis and Management of Diseases of the Liver.

At a luncheon meeting the speakers will be Drs. Eugene C. Keyes, Dearborn, Edgar H. Norris, Detroit, and Claude R. Keyport, Grayling.

Secretaries' Conference and School of Information.—A feature of the annual secretaries' conference of the Michigan State Medical Society at the Book-Cadillac Hotel, Detroit, January 30, will be a school of information to discuss trends in the regimentation of medicine. The speakers will be Mr. J. W. Holloway Jr., Chicago, Dr. L. Fernald Foster, Bay City, Dr. Robert L. Novy, Detroit, and Mr. William J. Burns, Lansing. Other speakers on the program will be Dr. Edward J. McCormick, Toledo, Ohio, "Need for Public Relations," and Floyd E. Armstrong, A.M., Cambridge, Mass., "Bureaucracy as It Affects Medicine." "Information to the Public," presented by Mr. Thomas A. Hendricks, Indianapolis, and Paul D. Bagwell, M.A., East Lansing, will be discussed by Dr. G. Lombard Kelly, Chicago, Secretary, Council on Medical Service and Public Relations of the American Medical Association. An exhibit entitled American Medicine and Medical Service, prepared by Thomas G. Hull, Ph.D., Chicago, will be displayed during the meeting.

NEW YORK

Graduate Instruction.—Dr. Ralph G. Stillman, assistant professor of medicine (clinical pathology), Cornell University Medical College, will deliver a graduate lecture on "The Significance of Laboratory Tests and Methods in the Practice of Medicine" before the Suffolk County Medical Society, January 26, in Patchogue.

New York City

Lectures for the Public.—On February 3 a series of medical lectures will be opened by members of the faculty of Long Island College of Medicine, Brooklyn, for lay members of the Society of the Friends of the College and their guests. Dr. Jean A. Curran, president and dean of the medical school, will give an address and Arnold H. Eggerth, Ph.D., associate professor of bacteriology, will discuss "Penicillin Research." Others in the series will be:

Dr. Howard W. Potter, February 10, War Nerves.
Dr. Alfred C. Beck, February 17, The Birth of a Baby.
Dr. Elberton J. Tiffany, February 24, Tropical Diseases, War and Postwar Aspects.
Dr. Phillips F. Greene, March 2, On China's Medical Front.

Medical Education in Relation to the Practice of Medicine.—A symposium on medical education in relation to the practice of medicine of the future opened at the New York University College of Medicine, January 17, to continue weekly until February 21. Dr. Alan Gregg, medical director of the Rockefeller Foundation, gave the first lecture on "Looking to the Future." Other speakers will be:

Leonard Carmichael, LL.D., Medford, Mass., January 24, The Relation Between Medical and Premedical Education.
Joseph W. Mountin, assistant surgeon general, U. S. Public Health Service, January 31, Public Health in the Future Medical Curriculum.
Dr. Louis Hamman, Baltimore, February 7, The Place of Psychiatry in the Teaching of Clinical Medicine.
Dr. Franz Goldmann, New Haven, Conn., February 14, Instruction in Social and Economic Aspects of Medicine.
Dr. Adam D. Macdonald, Manchester, England, February 21, Medical Education in Britain After the War.

Forum for Clinical Research.—The New York Academy of Medicine announced a forum for the first week of April in which research workers of the city and vicinity may present results of original research in clinical medicine. Presentations will be limited to twelve minutes. A brief period of free discussion will follow each presentation. The publication of presentations is not a necessary condition, but the academy plans to publish in its bulletin abstracts of presentations if the author so desires. The fact that material has in substance or in part been presented elsewhere will not be regarded as a bar to presentation, provided the work represents recent research. The committee extends an invitation to all research workers of Greater New York and of neighboring cities within a radius of 100 miles to submit an abstract, not to exceed two hundred words in length, of proposed presentation to the secretary of the committee on medical education of the academy not later than March 1. A formal invitation will then be extended by the committee to the authors of papers selected for presentation to participate in this program.

Changes in Faculty at Long Island.—Recent promotions on the faculty at Long Island College of Medicine, Brooklyn, include:

Dr. Thomas D. Dublin to professor of preventive medicine and community health.
Dr. Edwin P. Maynard Jr. to professor of clinical medicine.
George Samuelsen to assistant professor of chemistry.
Dr. George E. Anderson to clinical professor of medicine.
Dr. C. Thomas Chiaramonte to assistant clinical professor of dermatology and syphilology.
Dr. Walter A. Coakley to clinical professor of plastic and maxillofacial surgery.
Nicholas B. Dreyer, M.A., to professor of pharmacology.
Dr. Arthur E. Lamb to assistant clinical professor of medicine.
Dr. Dorothy Loomis to assistant professor of pathology.
Dr. A. W Martin Marino to assistant clinical professor of surgery.
George H. Paff, Ph.D., to associate professor of anatomy.
Dr. John M. Pearce to associate professor of pathology.
Dr. Howard W. Potter to professor of clinical psychiatry.
Dr. Ainsworth L. Smith to assistant clinical professor of surgery.

Dr. Phillips Foster Greene, professor of surgery at the Hsiang Ya Medical College, Changsha, China, has been appointed visiting professor of surgery, effective from Dec. 1, 1943 to July 1, 1944. Dr. Matthew Gerard Golden was appointed assistant clinical professor of otolaryngology and Dr. Walter Moehle clinical professor of ophthalmology.

OHIO

The Rachford Lectures.—Dr. William E. Ladd, William E. Ladd professor of child surgery, Harvard Medical School, Boston, presented the twelfth annual series of the Benjamin Knox Rachford Lectures, January 18-19. His subjects were "Surgical Manifestations of Congenital Malformations of the Alimentary Tract" and "Experiences with Esophageal Atresia and Tracheoesophageal Fistulas." The Rachford lectureships were established as a memorial to Dr. B. K. Rachford because of his work in the physiology of digestion and other scientific investigations, his organization of the pediatric department of the University of Cincinnati College of Medicine and his leadership in providing medical care for underprivileged infants and children of the community and through the Babies Milk Fund Association.

Commission for Study of State Institutions.—Governor John W. Bricker has named a committee to study conditions and needs in all state mental institutions and to make recommendations regarding them to the governor and the state department of public welfare. Members of the new committee are Dr. George T. Harding, Columbus, councilor for the Tenth District of the state medical association; Leonard W. Mayo, dean of the School of Social Sciences, Western Reserve University, Cleveland; Dr. Arthur T. Hopwood, medical superintendent of the Institution for Feebleminded, Apple Creek; Probate Judge Charles Chittenden, Toledo; William W. Greulich, Ph.D., head of the department of anatomy, Western Reserve University, Cleveland; Hal Griswold, Cleveland, attorney and former state welfare director, and Bleecker Marquette, executive secretary of the Public Health Federation, Cincinnati.

Industrial Health and the Doctor.—The theme of a series of industrial health conferences to be presented in February under the auspices of the state medical association and the state department of health will be "Industrial Health and the Doctor." A similar program will be presented at at each of the four centers: February 7 Toledo, Toledo Academy of Medicine Auditorium, February 8 Cleveland, Hotel Cleveland, February 9 Columbus, Deshler-Wallick Hotel, and February 10 Cincinnati, Netherland Plaza Hotel The speakers will include:

Dr. Carey P. McCord, medical consultant, Chrysler Corporation, Detroit.
Dr. Frank F. Tallman, Lansing, director of mental hygiene, Michigan State Hospital Commission.
Dr. Rutherford T. Johnstone, director, department of occupational diseases, Golden State Hospital, Los Angeles.

One hour at the afternoon session will be devoted to short informal discussions of the practical aspects of local industrial health problems, the role which the medical society should take and the responsibilities and obligations, as well as the opportunities, of the individual physician in industrial medicine and industrial health.

OKLAHOMA

Changes in the Faculty.—Mrs. Mildred T. Gossett, for years secretary to Major General Robert U. Patterson, M. C., U. S. Army, retired, formerly dean of the University of Oklahoma School of Medicine, Oklahoma City, has been appointed executive secretary of the medical school. Other changes on the faculty include:

John Walter Barnard, Ph.D., to assistant professor of anatomy.
Kenneth M. Richter, Ph.D., to assistant professor of histology and embryology.
Dr. Jack L. Valin to assistant prpfessor of anesthesiology.
Dr. John W. Cavanaugh to assistant professor of surgery.
Dr. John F. Hackler to professor of hygiene and public health.
J. Allan Stanley, Ph.D., to assistant professor of physiology.
Dr. Noble Franklin Wynn to instructor in pharmacology (part time).

Samuel A. Corson, Ph.D., has resigned as assistant professor of physiology.

OREGON

Tuberculosis Program.—Dr. William R. Murlin has been lent by the U. S. Public Health Service to serve as acting director of the division of tuberculosis control of the Oregon State Board of Health. One of the recent activities of the department is an x-ray case finding program among industrial workers in Portland.

Changes in Health Officers.—Rudolph R. Lang, passed assistant surgeon, U. S. Public Health Service, was assigned as health officer of Deschutes County, succeeding Dr. Frederick P. Rogers, who is entering military service.——Dr. Louie A. Maulding, Nyssa, has been appointed health officer of Malheur, succeeding Dr. Clyde R. Walker, resigned.

PENNSYLVANIA

Physician Observes Ninety-Seventh Birthday.—Dr. Louis H. Gibbs, Scranton, who started to practice in West Scranton in 1878, observed his 97th birthday, December 22. He graduated at the Bellevue Hospital Medical College, New York, in 1873.

Philadelphia

Dr. Reeves Named Director of Health.—Dr. Rufus S. Reeves has been appointed director of health for a four year term to succeed Dr. Hubley R. Owen. Dr. Reeves took office January 3. As a part of his program Dr. Reeves announces the introduction of a series of weekly radio health broadcasts to educate the public to better health and appointed the following to serve as chairmen of the advisory committees to cooperate in the project:

Dr. Henry L. R. Bockus, stomach and intestinal diseases.
Dr. Frank A. Craig, tuberculosis.
Dr. Damaso de Rivas, tropical diseases.
Dr. Charles W. Dunn, glands of internal secretion.
Dr. Harrison F. Flippin, pneumonia.
Dr. Sigmund S. Greenbaum, social hygiene.
Dr. Robert H. Ivy, plastic surgery.
Dr. Chevalier L. Jackson, bronchoscopic diseases.
Dr. Virgil H. Moon, laboratory studies.
Dr. John Royal Moore, bone and joint diseases.
Charles Patton, D.D.S., dentistry.
Dr. Frederic H. Leavitt, nervous and mental diseases.
Dr. Walter I. Lillie, diseases of the eye.
Dr. Charles F. Long, industrial medicine.
Dr. Samuel A. Loewenberg, internal medicine.
Dr. Clifford B. Lull, gynecology and obstetrics.
Dr. John D. McLean, public health.
Dr. Sarah I. Morris, preventive medicine.
Dr. Ralph M. Tyson, children's diseases.
Dr. Horace J. Williams, diseases of the ear, nose and throat.
Dr. Carroll S. Wright, diseases of the skin.
Dr. Ralph Pemberton, rheumatic diseases.
Dr. Alexander Randall, diseases of the urinary tract.
Dr. Thomas A. Shallow, surgery.
Dr. Anthony Sindoni Jr., diabetes.
Dr. Bernard P. Widmann, x-ray studies.
Dr. Michael G. Wohl, nutrition.
Dr. Charles C. Wolferth, diseases of the heart and blood vessels.

SOUTH CAROLINA

Public Health Election.—Dr. John Claude Sease, Little Mountain, was chosen president-elect of the South Carolina Public Health Association at its recent annual meeting in Columbia and Dr. George S. T. Peeples, Columbia, was installed as president. Mrs. Frank George, R.N., Columbia, is the secretary-treasurer.

Society Entertains Honorary Members.—The Greenville County Medical Society held a banquet on January 3 to pay tribute to its honorary members: Drs. Curran B. Earle and Chesley T. J. Giles, Greenville, Frederick G. James Greer, James W. Jervey and Fletcher Jordan, Greenville, Lawrence L. Richardson, Simpsonville, and Edward C. Stroud, Marietta. Dr. Wyatt Y. McDaniel, Taylors, also a honorary member, was unable to attend because of illness.

GENERAL

Red Cross Appeals for Funds.—The American National Red Cross announced that its appeal for funds will be conducted during the month of March, designated by President Roosevelt as Red Cross Month. In a release the Red Cross states that during 1944 it must supply some five million blood donations and each month during the year must recruit 2,500 nurses for the army and navy.

Medical Record Dedicated to Max Neuburger.—The *Medical Record* for December was dedicated to Dr. Max Neuburger, commemorating his seventy-fifth anniversary. Dr. Neuburger has been associated since 1939 with the Wellcome Historical Medical Museum, London. He formerly served as professor of the history of medicine at the University of Vienna and founded there the Institute for Medical History and Museum.

Slide Film Talkie on Public Health Service.—The Zurich General Accident and Liability Insurance Company has prepared a slide film talkie descriptive of the work of the U. S. Public Health Service and of the various state and county health departments. Copies have been sent to the health officers of the forty-eight states and the District of Columbia for their use. It is proposed to give wide distribution to the picture with a view to acquainting the American public with the health facilities available.

Examinations in Obstetrics and Gynecology.—The dates for the part II examination of the American Board of Obstetrics and Gynecology, to be held in the Hotel William Penn, Pittsburgh, have been changed from June 9-14 to June 7-13. The written examination and review of case histories (part I) for all candidates will be held in various cities in the United States and Canada, February 12. Additional information may be obtained from Dr. Paul Titus, secretary of the board, 1015 Highland Building, Pittsburgh 6.

Appointments to National Chamber of Commerce.—Dr. Leverett D. Bristol, executive director of the Hospital Council of Greater New York, has been appointed chairman of the health advisory council of the Chamber of Commerce of the United States, succeeding Dr. James S. McLester, Birmingham, Ala., who continues as a member of the council but who relinquishes the general chairmanship because of his increasing activity in the war service of the federal government and the state of Alabama. Dr. Anthony J. Lanza, chief of the occupational hygiene section of the Office of the Surgeon General, U. S. Army, has been named chairman of the council's committee on industrial health to succeed Dr. Bristol. Dr. McLester is a former president of the American Medical Association. Dr. Bristol and Dr. Lanza are members of the Council on Industrial Health of the American Medical Association.

Civilian Medicine to Gain from Progress in War Medicine.—A survey just concluded by the Johnson and Johnson Research Foundation, New Brunswick, N. J., indicates that substantial gains in civilian medicine will follow the conclusion of the war. A report states that "out of this war so far have come new therapeutic agents, new methods for treating shock, for preventing infections and healing wounds. New anesthetics are being used and new surgical skills are being developed." The world's many war theaters in effect are huge medical clinics where doctors in special fields accomplish results that might require years in peacetime. The new medical knowledge they are obtaining will be beneficial in days to come in preventing disease, in fighting infection, in treating accident victims and in such projects as opening up the tropics to human habitation at a higher standard of living. They will have a wide and beneficial application in civilian medicine, it was stated. This study discloses that the American medical profession, in cooperation with the surgeons general of the services, is striving constantly to shorten the lag between the development of new wartime medical discoveries and their application to those who need them.

Special Society Elections.—Anton J. Carlson, Ph.D., emeritus professor of physiology of the University of Chicago School of Medicine, has been elected president of the American Association for the Advancement of Science. Forest R. Moulton, Ph.D., Washington, D. C., is the permanent secretary. ——The American Society of Anesthetists announces the following officers, among others, chosen at its annual election Dec. 9, 1943: Drs. Emery A. Rovenstine, New York, president; Ralph M. Waters, Madison, Wis., president-elect; Leo V. Hand, Boston, Hugh O. Brown, Chicago, and Kenneth Heard, Toronto, Canada, vice presidents; McKinnie L. Phelps, New York, secretary, John G. Dunlop, Los Angeles, assistant secretary; Virginia Apgar, New York, treasurer, and Elisha

D. Embree, Houston, Texas, assistant treasurer. Dr. Albert J. Erdmann Jr., New York, one of the original founders of the Long Island Society of Anesthetists (which later became the New York Society and still later the American Society) and one of the pioneers in the field of anesthesia, attended and spoke briefly at this meeting.——Warren F. Draper, assistant surgeon general, U. S. Public Health Service, Washington, D. C., was chosen president-elect of the Association of Military Surgeons of the United States at its annual meeting in October, and Col. Lucius A. Salisbury, National Guard, Scarsdale, N. Y., was inducted into the presidency. Col. James M. Phalen, M. C., U. S. Army, retired, Washington, is the secretary. The next annual meeting will be in New York, November 2-4.

Mortality Among Children with Rheumatic Fever.—Children with rheumatic fever are subject to a very high mortality during the acute phase of the disease, but once this stage is passed the death rate falls sharply, according to the *Statistical Bulletin* of the Metropolitan Life Insurance Company in reviewing a study of 2,817 policyholders of the company under age 20 who received nursing care between 1936 and 1938 by the company's visiting nurse service during an acute attack of the disease and have been followed up each year since. The study covers the group up to 1942. Of the group 257, or 1 out of every 11, have died, giving a mortality about fifteen times as high as would be expected in a group of young persons of like sex and age distribution. The death rate among the boys has been about one-fifth greater than among the girls. In a group of children who were definitely reported to have heart involvement during the attack there occurred 152, or nearly 60 per cent of all the deaths. The bulletin points out that since there is some degree of heart involvement in practically every attack of rheumatic fever, whether or not reported, it may be concluded that cases in which a heart condition was actually reported represent the most severe in the study. Nearly one fifth died in the first year following the acute attack in the group with reported heart involvement. The actual death rate was 184 per thousand each year as compared with 23 per thousand in the second year and an average of 16 in the subsequent period of observation. In contrast, the bulletin states, a death rate of little more than 1 per thousand has prevailed among children of these ages in the general experience of the company. Among the group reported without heart involvement, the death rate in the first year was 18 per thousand, 11 per thousand in the second year and an average of 7 per thousand during the remaining period. Heart disease was reported as the cause of 80 per cent of the deaths among the children in the study. According to the bulletin the majority of the cardiac deaths were due to rheumatic heart disease. Particular interest is attached to the high incidence of subacute bacterial endocarditis. Among the children studied there were 26 deaths from this cause, or 13 per cent of the total from heart disease. Older children were principally affected, 21 of these 26 deaths being recorded among those 10 years or older at first observation, whereas only a little more than half of the cases in the study were in this age group. There were 38 deaths in the group attributed to infectious diseases, with 18 charged to pneumonia. The bulletin points out that the study clearly indicates seriousness of rheumatic fever in childhood, stating that the disease is now a leading cause of disability and death in the school ages and in adults up to middle life.

CANADA

Society News.—The British Columbia Medical Association at its annual meeting recently choose the following officers: Drs. Philip A. C. Cousland, Victoria, president; Allen Y. McNair, Vancouver, Andrew H. Meneely, Nanaimo, vice presidents; Gordon O. Matthews, Vancouver, honorary secretary. ——Dr. I. Newton Kugelmass, New York, gave the postgraduate fortnightly address at the University of Montreal, October 5, on "Blood Diseases in Children." He addressed the Montreal Medical Society the same day on "Early Recognition of Nutritional Deficiencies in Children."

CORRECTIONS

Gm. Instead of Mg.—In THE JOURNAL, Dec. 25, 1943, page 1115, in the article by Merrill, in the second column, under Conclusions, in the fifth line, 0.24 mg. should have been 0.24 Gm.

Tracheotomy in Bulbar Poliomyelitis.—In the article by Dr. T. C. Galloway in THE JOURNAL, Dec. 25, 1943, page 1096, the word "centimeter" at the end of the fifth line of the first case report and at the end of the fourth line in the report of case 3 should read "millimeter."

Government Services

New Supervisor of War Public Services

Mrs. Dorothy S. Bauman has been named supervisor of War Public Services for the Federal Works Agency in region I, comprising the New England states, New York, New Jersey and Pennsylvania. Mrs. Bauman "will supervise child care activities, including war nurseries and centers for before and after school care of young children of mothers in war essential jobs, and extended hospital and community services attributable to the war impact." Coincident with this announcement was one that $500,000 had been allotted by the Federal Works Agency to New York City for the conversion of a part of Bellevue Hospital and the convalescent camp in Welfare Island, New York, for the treatment and control of venereal diseases.

Hospital Men Volunteers

The Office of Civilian Defense and the American Hospital Association are cooperating in a program to organize hospital men volunteers to remedy the shortage of nonprofessional male personnel in hospitals. A leaflet has been issued containing suggestions for forming this service. Additional information may be obtained from "Volunteer Aide Services in Hospitals," published by the United Hospital Fund, 370 Lexington Avenue, New York, "Volunteers in Health, Medical Care and Nursing," published by the Office of Civilian Defense (available from the local defense council), and the preliminary report of the Committee on Volunteer Workers, Council on Association Development, entitled "Guide for the Use of Volunteer Service in Hospitals" (available from the American Hospital Association, 18 East Division Street, Chicago).

Examination for Assistant Surgeon and Passed Assistant Surgeon

The U. S. Public Health Service announces an examination for appointment to the grade of assistant surgeon and passed assistant surgeon in the regular corps of the service. Applicants for assistant surgeon must not have passed their 32d birthday, and applicants for the grade of passed assistant surgeon must not have passed their 39th birthday on the date the written examination is begun. All applicants must be citizens of the United States, graduates of a class A medical college, and must have completed or will complete by July 1 next at least one year of internship or its equivalent. Allowances are made for internships under the accelerated training program. The compensation of officers in the grade of assistant surgeon, both regular and reserve corps, is $3,411 per annum with dependents and $2,975.50 per annum without dependents. The compensation of officers in the grade of passed assistant surgeon, both regular and reserve corps, is $3,991 per annum with dependents and $3,555.50 per annum without dependents. The board of examiners will be in the following places at 9 a. m. on the dates specified. Candidates should arrange to have their physical examination completed and prepare their autobiographies at any one of the following listed places just prior to the date shown:

U. S. Marine Hospital, Staten Island, N. Y.	January 31
U. S. Marine Hospital, Boston	February 3
U. S. Marine Hospital, Baltimore	February 7
U. S. P. H. S. Dispensary, 4th and D Sts. S.W., Washington, D. C.	February 9
U. S. Marine Hospital, Norfolk, Va.	February 11
U. S. Marine Hospital, Cleveland	February 15
U. S. Marine Hospital, Chicago	February 17
Office of Indian Affairs, 218 Federal Building, Minneapolis	February 19
U. S. Marine Hospital, Seattle	February 23
U. S. Marine Hospital, San Francisco	February 28
U. S. P. H. S. Relief Station, 406 Federal Building, Los Angeles	March 3
U. S. P. H. S. District No. 8, 617 Colorado Building, 16th and California Sts., Denver	March 6
U. S. Marine Hospital, Kirkwood, Mo.	March 9
U. S. Marine Hospital, Louisville, Ky.	March 11
U. S. Public Health Service Hospital, Fort Worth, Texas	March 17
U. S. Marine Hospital, Galveston, Texas	March 20
U. S. Marine Hospital, New Orleans	March 22
Malaria Control in War Areas Office, 605 Volunteer Building, Atlanta, Ga.	March 25
U. S. P. H. S. Relief Station, 365 Federal Building, Miami, Fla.	March 28
U. S. P. H. S. Dispensary, 4th and D Sts. S.W., Washington, D. C.	April 4

Application blanks may be obtained from the Surgeon General, U. S. Public Health Service, Washington 14, D. C. (Bethesda Station).

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 11, 1943.

Nutrition in Enemy Occupied Europe

At the Royal Society of Medicine a discussion took place on nutrition in enemy occupied Europe. An appalling picture was presented. Col. W. E. Vignal said that the daily ration in France yielded only 1,084 calories and was deficient in fat, protein and sugar. Tuberculosis was increasing alarmingly, and the Germans were enforcing complete silence about it. They had returned to France many tuberculous prisoners, most of them urgently needing treatment. Increasing numbers of workmen were returning from Germany to die of tuberculosis after a few months work there. France was now largely deprived of her sanatoriums and supplies, and patients had to wait six or eight months for treatment in institutions. Acute bronchopneumonic types were common, and so was rapid wasting ending in death. Many suffered from progressive asthenia and severe malnutrition. The condition of children was even more alarming. They showed a high incidence of tuberculosis. Ninety per cent of one group studied were 2 to 9 Kg. under weight. The physiologist Richet had been imprisoned for saying that 10 million persons were suffering from hunger and 2 million were likely to die.

Dr. A. P. Cawadias described famine conditions in Greece. Well to do people in Athens had 1 ounce of bread on alternate days, camomile tea and gruel, with oil and carrots and chicory coffee. Sausages of dog, rat and cat were sold at outrageous prices. The mortality was terrible; they had ceased to bother about tuberculosis, but now the incidence of malaria was 100 per cent in endemic areas, and hunger edema and other nutritional diseases were spreading.

Prof. J. Young quoted a paper by Professor Heymans of Ghent, who had been punished severely by the Nazis for publishing it. The daily basic ration was only 1,230 calories. Certain classes were allowed supplementary rations, but although rations were adequate for the younger children they were worse as age advanced. A loss of 10 to 15 Kg. in weight was common. Tuberculosis was rife and was increasing.

Treatment of Cancer of the Prostate by Synthetic Estrogens

At a meeting of the British Empire Cancer Campaign, Prof. E. C. Dodds, Courtauld professor of biochemistry in the University of London and director of the Courtauld Institute of Biochemistry, Middlesex Hospital, called attention to results obtained in treating cancer of the prostate with synthetic estrogens. As a nation, Professor Dodds stated, we could take a certain amount of credit in the discovery of this method, for, while the actual observations of cases were made by our American colleagues, the weapon which they used was forged by Englishmen working directly under the support of the British Empire Cancer Campaign. Statistics for 1941 showed that this discovery would eliminate intense suffering and death of about 4,000 persons annually in England and Wales, he said; for the first time in history it was possible to state that one form of cancer could be completely controlled and the patient rendered symptom free by giving a few pills each day. The American work had been completely confirmed here, Professor Dodds said. He warned that the discovery was confined to cancer of the prostate. Whether or not it uncovered an entirely new field of research had still to be determined, he felt, and would be investigated by those working with the support of the campaign.

The speaker indicated that it was impossible even for the average scientific worker to realize the tremendous increase in knowledge that had taken place not only during the twenty years existence of the campaign but even since the beginning of the war. The laboratory of ten years ago was almost as much out of date today as one 50 years old. The whole technic of pathology and biochemical research had been utterly changed by the introduction of new methods, Professor Dodds stated, and the technical use of the new instruments required new and deep knowledge of a most complex character.

The duke of Gloucester, brother of the king, who presided, said that the campaign would soon reach its twenty-first anniversary. During the years that he had been their president, he said, he had seen much to convince him that all associated with the campaign would some day gain their reward in the knowledge that they had contributed much toward victory in the war against cancer. He emphasized that cancer research was slow and laborious work, with little if any glamor or limelight, but that many more young enthusiastic workers would be attracted to it were they not anxious about their daily existence. Apart from financial support of the personnel at large research centers, the campaign had always tried to encourage these young enthusiasts, and he was glad to know that generous contributors from time to time made provision for the creation of cancer research scholarships and fellowships.

Prevention of Tuberculosis in Nursing Staffs of General Hospitals

In a memorandum on the supervision of nurses' health a committee of three nursing matrons under the chairmanship of Sir Charlton Briscoe has made important suggestions on the prevention of tuberculosis among nursing staffs of general hospitals. It is pointed out that the nurse in a general hospital is not so well safeguarded against infection with tuberculosis as the nurse in a sanatorium, in which there is equipment for sterilizing sputum mugs, china and handkerchiefs, and where the nurse does much of her work in the open air. In general hospitals the new and untrained student nurse often has to handle sputum mugs, and handkerchiefs are often allowed to accumulate in a patient's locker until his relatives call for them. A sink may become contaminated if china from infectious patients is washed there.

Among the other recommendations made by the committee are the following: All nurses should be taught thoroughout their training by sister tutors and war sisters the precautions necessary in the nursing of the tuberculous and shown how infection is spread in respiratory conditions. They should learn how the patient can avoid distributing droplet infection, that the hands of those nursing patients with positive infection should be washed often and that no books or papers belonging to such patients should be lent to others. They should remove the overall or apron worn in the ward before going to meals. They should be encouraged to report at once any cough or respiratory infection which they notice in themselves, and especially any persistent feeling of fatigue. All nurses under 30 who are nursing tuberculous patients should be examined by x-rays at three month intervals. Every patient who is coughing up sputum should be nursed "on precautions," if possible in a separate ward, until tuberculosis is excluded. Whenever possible a boiler should be installed so that all sputum mugs can be sterilized before cleaning. The hospital should provide the patient with handkerchiefs and have special arrangements for laundering them. Bed linen should be collected and sterilized with proper precautions. Methods of sweeping and dusting around beds should be such as to avoid dissemination of infected dust. If there is no sterilizer for china, that used by tuberculous patients should be washed in a separate sink.

The Influenza Epidemic

The outbreak of an epidemic of influenza all over the country was reported in a previous letter. The epidemic began in the North, where already it shows signs of abating, although the peak does not appear to have been reached in London and the Midlands. Its development is shown by the deaths attributed to influenza in the large cities. For the weeks from November 13 to December 11 the deaths reported were respectively 46, 106, 375, 709 and 1,148. These deaths occurred mainly among the elderly. As a result the attacks have been mild with pyrexia of only three or four days and no complications. The most common complication is tracheobronchitis and, in the severe cases, bronchiolitis with patches of bronchopneumonia. This type has been responsible for deaths in young as well as old persons. The epidemic has slightly impaired the war effort. The shortage of doctors has left too few for this emergency. The government is giving help by allowing the army doctors to assist in the treatment of civilian patients as far as their military duties permit. There is also a shortage of pharmacists and dispensers, and therefore the call of these workers for war service has been temporarily suspended.

BRAZIL

(From Our Regular Correspondent)

Nov. 30, 1943.

Standardization of the Test for Latent Tuberculin Allergy in Man

Dr. Arlindo de Assis of the Viscondessa de Morais Tuberculosis Institute of Rio de Janeiro has been carrying on extensive studies of the pathogenicity of the BCG bacillus and infratuberculin allergy and has been able to establish a standard technic for the so-called Willis test. As a conclusion to his first series of studies Dr. de Assis was able to prove that during the course of the primary tuberculous infection of infancy the tuberculin allergy of the skin is established through a preallergic period the presence of which had not been demonstrated before. This led him to a second conclusion: that the intradermal inoculation of 0.1 mg. of heat killed BCG vaccine in children who are in the preallergic period is accompanied by specific and characteristic reactions permitting recognition of the preexistence of a virulent tuberculous infection before the appearance of cutaneous allergy and consequently of x-ray signs and clinical symptoms. Dr. de Assis's latest series of investigations has been aimed at study of the period of allergy that frequently follows the BCG vaccination at a short interval if the immunized person has the chance to escape entirely the added action of other virulent bacilli.

Forty-two children immunized by mouth with BCG were tested intradermically with old tuberculin and recognized as having lost the allergy specifically caused by vaccination after variable lengths of time. Only those children who failed to react to Mantoux tests with 10 mg. of old tuberculin were included in the study. They all have been kept under complete medical care for a long time and are recognized as free from tuberculous disease. Heat killed tubercle bacilli were injected intradermically, 0.1 mg. having been chosen as the test dose. According to previous observations an early appearance of tuberculin hypersensitiveness was checked after a fourteen day period as a routine method of detecting latent or infratuberculin allergy. Clearcut infiltrations reaching 6 mm. in diameter at the site of the inoculation were considered reliable proof of a preexisting latent allergy, as were positive tuberculin tests occurring at the beginning of the first week after the inoculation of heat killed bacilli. On the basis of such criteria, 32 children (76.2 per cent) proved to keep latent BCG allergy, although some of them had failed to react to routine tuberculin tests for seven years previously. All the children presented local infiltrative changes. General tuberculin responses were found less frequently than local ones, 16 children (50 per cent of the positive cases) having shown positive tuberculin tests within the first week following the heat killed bacillus test. No definite relationship could be established between local changes promoted by the heat killed bacillus injection and the early causes of tuberculin hypersensitiveness. Oral revaccinations with living BCG did not exert any apparent influence on the frequency or intensity of the latent allergy. Since this kind of allergy has been frequently found in children who resisted virulent tuberculosis environments, the conclusion was drawn that the refractory status against tuberculous disease does not necessarily imply an ability to react to current tests for tuberculin hypersensitiveness. In these children the immunity to tuberculosis was rather associated with the latent allergy.

Two New Cases of Human Toxoplasmosis

Dr. Nery Guimarães of the Oswaldo Cruz Institute published recently a paper describing an established case and a suspected case of human toxoplasmosis occurring in rural sections of Brazil. With the initial work of Castellani in 1914, investigators of various countries have reported the occurrence of human toxoplasmosis, a fact that not long ago was a matter of sharp controversy. About 18 established cases were reported between 1923 and 1942 in Praga, in New York, in St. Louis, in Chicago, in Cincinnati, in Rio de Janeiro and in Amsterdam by Janku, Wolf and Cowen, Page, Sabin, Pinkerton, Torres, Wolf and De Lange, of which 10 were congenital. The symptoms presented by the patients were principally fever, convulsions, hydrocephalus, cyanosis and vomiting. Although no detailed microscopic studies have been done in all cases, the disease is characterized by granulomatous meningoencephalomyelitis (Wolf and Cowen), often associated with myocarditis and chorioretinitis. But the diagnostic sign of greatest importance is the presence of foci of profound cerebral calcification and chorioretinitis in the newborn (Wolf, Cowen and Page). Generally the disease has been encountered in towns on postmortem examination, with subsequent hospital observations. Yet in some cases a more or less long stay in suburban and rural sections was pointed out. This fact seems to be of great epidemiologic importance. The parasite is found in a large number of animals in more or less intimate contact with man, but how the disease is transmitted to man is not established, nor is the transmission of toxoplasmas among animals known as yet. Dr. Guimarães's patient was a Negro youth of 18, an agricultural laborer, whose disease lasted twenty-seven days and was characterized by high fever, paresis of the lower limbs, nuchal rigidity, dysphasia and monocytosis. The postmortem macroscopic and microscopic examinations showed encephalitis, pericarditis, nephritis and a meningoencephalomyelitis with extensive inflammatory areas. The presence of the parasites was established. The second patient was a mulatto girl baby aged 14 months, born with hydrocephalus and presenting agitation, convulsions and tremor of the eyeballs. The x-ray examination showed typical little foci of cerebral calcification and deficient ossification of the extremities of the long bones. Toxoplasmas were isolated from guinea pigs and mice inoculated with fluid from the patient. The isolated strain appeared to be pathogenic for dogs, guinea pigs, rabbits, mice and pigeons.

Marriages

RANDOLPH CASSELLS CHARLES to Miss Harriet Winston Breeden, both of Bennettsville, S. C., November 25.

JOHN MARCUS KESTER JR. to Miss Lura Kirkland, both of Columbia, S. C., at Sumter, November 5.

E. THOMAS BRAND, Woodstock, Ill., to Mrs. Martha H. Brigham of Seneca, November 26.

DOUGLAS H. ROBERTSON to DR. RUTH F. GEISSINGER, both of New York, December 18.

Deaths

Charles Henry May ✠ New York; College of Physicians and Surgeons, New York, 1883; member of the American Academy of Ophthalmology and Otolaryngology, American Ophthalmological Society and the Association for Research in Ophthalmology, Inc.; fellow of the American College of Surgeons; specialist certified by the American Board of Ophthalmology; lecturer in diseases of the eye, New York Polyclinic, from 1887 to 1890; instructor in ophthalmology and chief of clinic at his alma mater from 1890 to 1903; served on the staffs of the Monmouth Memorial Hospital, Long Branch, N. J., French Hospital and the Mount Sinai Hospital; director and visiting surgeon, eye department, Bellevue Hospital, from 1915 to 1925 and later consulting ophthalmic surgeon; in 1914 introduced the improved system of illumination for electric ophthalmoscopes; author of "Manual of Diseases of the Eye"; recently completed revision of the eighteenth edition; the book had been translated into ten foreign languages; died December 7, aged 82, of pneumonia.

Frederick Casper Rinker ✠ Norfolk, Va.; University of Virginia Department of Medicine, Charlottesville, 1911; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; president-elect of the Norfolk County Medical Society; member and past president of the Southside Virginia Medical Society; formerly assistant professor of clinical medicine at the University of Wisconsin Medical School, Madison; a lieutenant in the U. S. Army during World War I; a member of the U. S. Naval Reserve; examining physician for the local board of the Selective Service System; on the staffs of the Norfolk General Hospital, Hospital of St. Vincent De Paul and the Leigh Memorial Hospital, where he died November 15, aged 52, of sclerotic heart disease.

David M. R. Culbreth, Baltimore; College of Physicians and Surgeons, Baltimore, 1883; for many years professor of botany, materia medica and pharmacognosy, Maryland College of Pharmacy, and professor of materia medica and pharmacognosy in the medical and dental departments of the University of Maryland; honorary president of the American Pharmaceutical Association, 1935-1936; member of the American Academy of Medicine and the Maryland Academy of Science; author of "Pharmaceutical Botany," "Materia Medica and Pharmacology," "Materia Medica Compend" and "University of Virginia—Memories of Her Student Life and Professors"; died October 20, aged 87.

Albert Warren Wagner, Buffalo; University of Buffalo School of Medicine, 1910; member of the Medical Society of the State of New York; also a pharmacist; served in the medical corps of the U. S. Army during World War I; medical examiner for the Cheektowaga Selective Service during World War I and recently; health officer of Cheektowaga and medical examiner for public and parochial schools for many years; on the staff of the Deaconess Hospital; died in the Veterans Administration Facility, Batavia, N. Y., November 15, aged 61, of hypertensive and coronary arteriosclerotic heart disease.

Raymond Duane Sleight, Battle Creek, Mich., University of Michigan Department of Medicine and Surgery, Ann Arbor, 1897; specialist certified by the American Board of Ophthalmology; member of the Michigan State Medical Society, American Academy of Ophthalmology and Otolaryngology and the Association for Research in Ophthalmology, Inc.; served in France and in the medical corps of the U. S. Army during World War I; recently examiner for the local draft board; on the staffs of the Community and the Leila Y. Post Montgomery hospitals; died December 7, aged 68, of cerebral hemorrhage.

Frank Warner ✠ Columbus, Ohio; Bellevue Hospital Medical College, New York, 1883; member of the House of Delegates of the American Medical Association in 1902 and 1903; fellow of the American College of Surgeons; at one time professor of operative and clinical surgery at the Starling Medical College; for many years a member of the state board of health; on the surgical staffs of the Grant, White Cross and Children's hospitals; trustee of the Columbus Public Library since 1910; died in the University Hospital November 28, aged 88, of heart disease.

Josiah Odin Tilton, Lexington, Mass.; University of the City of New York Medical Department, New York, 1882; member of the Massachusetts Medical Society; the first school physician in Lexington; served on the local board of health and as chairman of the Lexington park commissioners; in 1932 a bronze tablet in his honor was placed in the New England Medical Center in Boston in recognition of a "lifetime of unselfish service to the community of Lexington"; died in the Metropolitan Hospital, Waltham, December 2, aged 90, of pneumonia.

Michael Abramowicz, New York; Medizinische Fakultät der Universität, Wien, Austria, 1920; was killed December 1, aged 51, when a self-service elevator from which he was alighting suddenly started upward and crushed him.

Joseph Akerman ✠ Augusta, Ga.; Johns Hopkins University School of Medicine, Baltimore, 1900; professor of obstetrics at the University of Georgia School of Medicine; member of the South Atlantic Association of Obstetricians and Gynecologists; fellow of the American College of Surgeons; superintendent of the James Walker Memorial Hospital, Wilmington, N. C., from 1902 to 1906; from 1916 to 1917 superintendent of the University Hospital, where he had been a member of the staff; died December 9, aged 71, of heart disease.

Samuel Lane Anderson, Concordville, Pa.; Medico-Chirurgical College of Philadelphia, 1892; died November 10, aged 79.

William Clifford Bailey ✠ Decatur, Ala.; Medical College of Alabama, Mobile, 1906; on the staff of the Benevolent Society Hospital; local surgeon for the Southern Railroad; surgeon for the Southern Oil and Alabama Power Company; died recently, aged 61, of thrombosis.

William Dwight Baldwin, Makawao Maui, Territory of Hawaii; Johns Hopkins University School of Medicine, Baltimore, 1901; member of the Hawaii Territorial Medical Association; died October 31, aged 70, of coronary thrombosis.

Ira Bennett Bartle, San Luis Obispo, Calif.; Medical Department of Tulane University of Louisiana, New Orleans, 1901; member of the California Medical Association; served during World War I; president of the San Luis Obispo Rotary Club; died November 7, aged 72.

Arthur Joseph Batty ✠ Portage, Wis.; Rush Medical College, Chicago, 1906; fellow of the American College of Surgeons; veteran of the Spanish-American War and World War I; president of the First National Bank; for many years president of the chamber of commerce; on the staff of St. Savior's Hospital, where he died December 4, aged 62, of gastric hemorrhage due to ulcer.

James Bedsole, Hacoda, Ala.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1906; member of the Medical Association of the State of Alabama; died November 2, aged 72.

Edmond E. Blaauw ✠ Buffalo; Universiteit van Amsterdam Geneeskunde Faculteit, Netherlands, 1893; member of the American Academy of Ophthalmology and Otolaryngology; died December 4, aged 76, of coronary disease.

Charles H. Brobst, Peoria, Ill.; Medico-Chirurgical College of Philadelphia, 1888; member of the Illinois State Medical Society and the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; for many years on the staff of the Proctor Hospital, where he died November 25, aged 79.

Edward Morton Buck, Montrose, Iowa; Keokuk Medical College, 1896; chairman of the board of health, school examiner and president of the school board; on the staff of St. Joseph Hospital, Keokuk, where he died November 30, aged 78, of cardiac asthma.

Allen W. Budd, Canton, Ohio; Cleveland Medical College, 1880; died December 10, aged 91, of senility.

William Sabin Chase, Akron, Ohio; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1901; past president of the Summit County Medical Society; served on the staff of the City Hospital; a founder and on the staffs of the Peoples and Children's hospitals; died December 1, aged 76, of a self-inflicted bullet wound.

George Henry Cleveland, Glencoe, Ill.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1882; at one time editor of the *Clinical Review;* died in the Broadhurst Nursing Home, Evanston, December 19, aged 81, of chronic myocarditis and arteriosclerosis.

Elmer Lorenzo Crouch, Palo Alto, Calif.; Missouri Medical College, St. Louis, 1891; member of the American Psychiatric Association; served during World War I; at one time assistant physician on the staff of the Jacksonville (Ill.) State Hospital; for many years on the staff of the Veterans Administration Facility, San Francisco; died in the Palo Alto Hospital November 25, aged 74, of carcinoma.

James Francis Curry, Dunnellon, Fla.; Emory University School of Medicine, Atlanta, 1919; died in the Munroe Memo-

rial Hospital, Ocala, November 3, aged 48, of injuries received in an automobile accident.

Pierce Young Duckett, Cornelia, Ga.; University of Georgia Medical Department, Augusta, 1885; member of the Medical Association of Georgia; died in Decatur November 18, aged 81, of pneumonia.

Hiram R. Elliott Sr., Courtland, Miss.; Memphis (Tenn.) Hospital Medical College, 1900; died November 27, aged 69, of tumor of the brain.

Charles Chauncy Foster, Cambridge, Mass.; Harvard Medical School, Boston, 1883; member of the Massachusetts Medical Society; veteran of the Spanish-American War; formerly surgeon general of the commonwealth with the rank of brigadier general; served on the staff of the Cambridge Hospital; died December 2, aged 86, of diabetes mellitus.

Jacob Adam Fraunfelder ⊕ Nazareth, Pa.; Medico-Chirurgical College of Philadelphia, 1896; also a pharmacist; past president of the Northampton County Medical Society; medical examiner for the borough of Nazareth recently and during World War I; for many years physician for the borough schools; past president of the Rotary Club; died November 6, aged 71.

Fredrick George Gilbert, Rapid City, S. D.; Homeopathic Hospital College, Cleveland, 1889; died in St. John's McNamara Hospital November 14, aged 76.

Leonard Harry Green, Los Angeles; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1922; member of the California Medical Association; specialist certified by the American Board of Pediatrics, Inc.; on the staffs of the Cedars of Lebanon Hospital and the Children's Hospital; died recently, aged 46.

James Taylor Hammond, Atlanta, Ga.; University of Georgia Medical Department, Augusta, 1883; member of the Medical Association of Georgia; died in Albany November 2, aged 87.

Samuel Smith Hill ⊕ Wernersville, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1894; member of the American Psychiatric Association; formerly superintendent of the Wernersville State Hospital; for many years president of the Wernersville National Bank; died in the Reading Hospital, Reading, November 22, aged 75, of carcinoma of the stomach.

John Sutherland Hurt, Atlanta, Ga.; University and Bellevue Hospital Medical College, New York, 1903; member of the Medical Association of Georgia; died November 26, aged 66.

Wilbur Olin Jenkins ⊕ Indianapolis; Medical College of Ohio, Cincinnati, 1884; served as secretary of the city board of health and as a member of the board of public works and safety; at one time on the staff of St. Anthony's Hospital, Terre Haute; died December 3, aged 82.

Victor Monroe Johnson, Memphis, Tenn.; Bellevue Hospital Medical College, New York, 1888; Arkansas Industrial University Medical Department, Little Rock, 1896; died December 12, aged 80, of secondary anemia.

Ellis Kackley, Soda Springs, Idaho; University of Tennessee Medical Department, Nashville, 1898; served during World War I; medical superintendent of the Caribou County Hospital; died November 22, aged 72.

William E. Lawson, Homestead, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1897; formerly member of the school board; on the staff of the Homestead Hospital; died November 26, aged 71, of coronary occlusion.

Wesley P. Lewallen, Canadian, Okla.; Kentucky School of Medicine, Louisville, 1901; died October 18, aged 81.

Elverton E. Major, Los Angeles; Rush Medical College, Chicago, 1878; died November 12, aged 89.

James Ragan McEachern ⊕ Tampa, Fla.; Atlanta College of Physicians and Surgeons, 1902; served as president of the Florida Public Health Association; at one time a member of the city council of Monticello, a member of the state senate and legislature; served in the medical corps of the U. S. Army in France during World War I; health officer of Tampa; died suddenly in November, aged 70.

John Seaborn McKenzie, Miami, Fla.; Louisville (Ky.) Medical College, 1892; died in a local hospital October 17, aged 77.

John J. McShane, Springfield, Ill.; Rush Medical College, Chicago, 1903; member of the Illinois State Medical Society; chief of the division of communicable diseases, state department of public health; at one time a member of the health department of Chicago and health commissioner of Kenosha, Wis.; died in St. John's Hospital December 14, aged 65, of cerebral hemorrhage.

B. B. Meroney, Murphy, N. C.; Gate City Medical College, Texarkana, Ark., 1906; died in a local hospital November 19, aged 77.

John Sewall Milliken ⊕ Portland, Maine; Medical School of Maine, Portland, 1900; served during World War I; died in the Maine General Hospital recently, aged 67, of chronic rheumatic heart disease.

Henry Pinckney Moore, Orangeburg, S. C.; Medical College of the State of South Carolina, Charleston, 1912; served during World War I; on the staff of the Tri-County Hospital; died December 9, aged 56, of coronary thrombosis.

Donn Piatt Murray ⊕ Dunkirk, Ind.; Medical College of Indiana, Indianapolis, 1894; a director and vice president of the First State Bank of Dunkirk; for many years president of the school board; on the staffs of the Jay County Hospital, Portland, and the Ball Memorial Hospital, Muncie, where he died November 9, aged 73.

Stephen Dixon Naylor, Stephenville, Texas; Medical Department of Tulane University of Louisiana, New Orleans, 1890; member, and vice president 1928-1929, State Medical Association of Texas; served as medical examiner of cadets at John Tarleton College; for many years a member of the board of directors of the chamber of commerce; died in a local hospital October 17, aged 77, of cerebral hemorrhage.

Lera Page, Rutherford, Tenn. (licensed in Tennessee in 1913); served as postmaster; died November 25, aged 68.

Harry Middleton Parker, Wedgefield, S. C.; Medical College of the State of South Carolina, Charleston, 1913; member of the South Carolina Medical Association; served during World War I; died November 29, aged 59.

Jefferson Thompson Parks Jr., Oklahoma City; University of Oklahoma School of Medicine, Oklahoma City, 1943; died in the Wesley Hospital November 11, aged 34, of pulmonary tuberculosis.

Roger V. Parlett, Tucson, Ariz.; University of Maryland School of Medicine, Baltimore, 1912; served overseas during World War I; served as physician and surgeon for the Sundt Construction Company; at one time associated with the Indian Service and U. S. Public Health Service; died in St. Mary's Hospital November 6, aged 55, of uremia.

James Denham Pasco, Jacksonville, Fla.; University of Virginia Department of Medicine, Charlottesville, 1906; member of the Florida Medical Association; on the staffs of the Riverside Hospital and the Church Home for Boys; died November 12, aged 60, of perforating ulcer of stomach.

Harold Foster Port ⊕ Titusville, Pa.; University of Pittsburgh School of Medicine, 1928; served overseas during World War I; a member of the local board of health; on the staff of the Titusville Hospital; died November 13, aged 49.

Joseph Charles Pothier ⊕ New Bedford, Mass.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1887; formerly a member of the school committee; on the courtesy staff, St. Luke's Hospital; died December 1, aged 78, of coronary infarct.

Elmer John Presper, Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1912; member of the Medical Society of the State of Pennsylvania; served overseas during World War I; medical examiner for the civil service commission for many years; on the staffs of St. Mary's and St. Christopher's hospitals; died in the U. S. Naval Hospital December 2, aged 52, of cirrhosis of the liver.

Coleman Bernard Ransone ⊕ Roanoke, Va.; Medical College of Virginia, Richmond, 1915; health commissioner of Roanoke; at one time health officer of Newport News; served in the U. S. Navy from 1917 to 1920; died December 3, aged 56, of coronary thrombosis.

Arthur Earnest Rogers, Jacksonville, Fla.; Rush Medical College, Chicago, 1897; served during World War I; died in the Veterans Administration Facility, Bay Pines, November 15, aged 73, of acute bronchopneumonia.

Clarence Otis Sansing ⊕ Houston, Texas; Baylor University College of Medicine, Dallas, 1926; for many years lieutenant in the medical reserve corps of the U. S. Army; served on the staffs of the Hermann Hospital, St. Joseph's Infirmary, Memorial Hospital, Jefferson Davis Hospital and the Methodist Hospital; died November 17, aged 45, of coronary occlusion.

William Frederick Schenk, New Corydon, Ind.; Curtis Physio-Medical Institute, Marion, 1896; served as a member

of the local board of health; for many years member of the state legislature; director of the Bank of Geneva; died in the Adams County Memorial Hospital, Decatur, November 28, aged 77, of hemorrhage due to ruptured aneurysm.

Minnie Myrtle Seiler, Fort Myers, Fla.; Woman's Medical College of Baltimore, 1904; died November 14, aged 65.

Daniel Anderson Simmons ✠ Roseville, Ill.; University of Illinois College of Medicine, Chicago, 1929; local health officer; on the staff of the Monmouth Hospital, Monmouth; died in the University Hospital, Chicago, November 18, aged 39, of respiratory failure following a nephrectomy.

George Wallace Simrell, Brooklyn; Long Island College Hospital, Brooklyn, 1899; also a pharmacist; member of the Medical Society of the State of New York; served in the medical corps of the U. S. Army during World War I; formerly on the staffs of the Swedish, Caledonian and Midwood hospitals; died in the Veterans Administration Facility, Northport, N. Y., November 30, aged 74, of chronic myocarditis.

Edward A. Smith ✠ Baltimore; Baltimore Medical College, 1891; died November 1, aged 81, of chronic myocarditis.

William A. Smith, Madison, Va.; University of Maryland School of Medicine, Baltimore, 1880; member of the Medical Society of Virginia; died November 10, aged 88, of senility.

William Edgar Sperow, Carlisle, Iowa; University of Maryland School of Medicine, Baltimore, 1894; member of the Iowa State Medical Society; on the staff of the Iowa Lutheran Hospital, Des Moines; died in the Iowa Methodist Hospital, Des Moines, November 10, aged 72, of heart disease.

Charles Abraham Spivacke ✠ New York; Cornell University Medical College, New York, 1899; member of the American Association for the Study of Allergy; a founder and director of the allergy clinic, Lebanon Hospital dispensary; died November 21, aged 66.

Walter Thomas Stenson ✠ New York; McGill University Faculty of Medicine, Montreal, Que., Canada, 1922; specialist certified by the American Board of Surgery; fellow of the American College of Surgeons; served during World War I; on the surgical staff of the Lenox Hill Hospital; died in Punta Gorda, Fla., December 8, aged 48, of acute pulmonary congestion and coronary thrombosis.

Daniel Boone Stone, Smiths Grove, Ky.; University of Tennessee Medical Department, Nashville, 1888; member of the Kentucky State Medical Association; died November 6, aged 83.

Arthur MacMahan Sullivan, South Bend, Ind.; Indiana University School of Medicine, Indianapolis, 1909; member of the Indiana State Medical Association; died November 27, aged 62.

Louie P. Tessier, Augusta, Ga.; University of Georgia Medical Department, Augusta, 1896; served as city physician; formerly a druggist; died November 27, aged 71.

Constantine Theodore, Chicago; National University of Athens School of Medicine, Greece, 1902; member of the American Association of Railway Surgeons; a member of the Selective Service Board number 3; on the staff of the Illinois Central Hospital; founder and organizer of the Greek Grammar School at St. Constantine Church; for twenty-eight years Cook County jail physician; past president of the Greek Professional Mens Club; died November 24, aged 64, of chronic myocarditis and chronic bronchiectasis.

Clive Wylie Thompson, Cleveland; University of Wooster Medical Department, Cleveland, 1907; member of the Ohio State Medical Association; veteran of the Spanish-American War and World War I; served on the staffs of the Huron Road Hospital, East Cleveland, and St. Luke's Hospital; died November 7, aged 64, of coronary occlusion.

David Orval Thompson, Sycamore, Ill.; Chicago Medical School, 1923; member of the Illinois State Medical Society; a director of the Illinois Tuberculosis Association and the De Kalb County Tuberculosis Association; on the staffs of the De Kalb Public and St. Mary's hospitals, De Kalb, and the Sycamore Municipal Hospital; a member of the chamber of commerce; died November 6, aged 60, of coronary thrombosis.

CAPT. CHARLES F. PECORARO
M. C., A. U. S., 1908-1943

Charles Ethelbert Triplett, Morocco, Ind.; Rush Medical College, Chicago, 1895; died November 25, aged 81, of carcinoma of the prostate and bladder.

Charles Sutton Trites, Napanoch, N. Y.; Hahnemann Medical College and Hospital of Philadelphia, 1896; member of the American Psychiatric Association; on the staff of the Institution for Male Defective Delinquents; at one time staff psychiatrist, Auburn Prison, Auburn; died in the Veterans Memorial Hospital, Ellenville, December 7, aged 68, of pneumonia.

Herman H. Tuttle, Springfield, Ill.; Keokuk (Iowa) Medical College, 1894; cited for gallantry in action in World War I; at one time health officer of Springfield; died in the Veterans Administration Facility, Downey, December 9, aged 72, of chronic myocarditis with myocardial degeneration and general arteriosclerosis.

William Alva Van Wart, Cherryfield, Maine; Bellevue Hospital Medical College, New York, 1893; died November 2, aged 75.

Benjamin S. Walker, Corydon, Iowa; Keokuk Medical College, College of Physicians and Surgeons, 1900; member of the Iowa State Medical Society; served during World War I; a member of the town council, school board and Rotary Club; on the staff of the Corydon Hospital; died November 2, aged 70, of hypertension and cerebral hemorrhage.

Horace Seeley Warner, Thomaston, Conn.; College of Physicians and Surgeons, New York, 1884; member of the Medical Society of the State of New York; for many years medical referee of the Aetna Life Insurance Company, New York; died November 30, aged 85, of myocarditis.

Richard Cornell Warren ✠ Ithaca, N. Y.; Cleveland Homeopathic Medical College, 1903; veteran of the Spanish-American War; on the staff of Tompkins County Memorial Hospital; died December 15, aged 69, of coronary thrombosis.

Albert G. Wilkinson, Wayne, W. Va.; Louisville (Ky.) Medical College, 1893; president of the Wayne County Bank; county health officer; died November 29, aged 77, of heart disease.

Albert Ross Wilsey, Breckenridge, Mo.; St. Louis University School of Medicine, 1902; served during World War I; died in the Missouri Methodist Hospital, St. Joseph, November 7, aged 70, of strangulated hernia and intestinal obstruction.

Peter Joseph Wollersheim, Forest Junction, Wis.; Marquette University School of Medicine, Milwaukee, 1928; member of the State Medical Society of Wisconsin; on the staffs of St. Vincent's and Bellin Memorial hospitals, Green Bay; died in Stevens Point November 28, aged 48, of pneumonia.

John Henry Young ✠ Lemongrove, Calif.; Ohio Medical University, Columbus, 1900; fellow of the American College of Surgeons; attending obstetrician and gynecologist, San Diego County and Mercy hospitals, San Diego, and Scripps Memorial Hospital, La Jolla; died October 14, aged 70, of a self-inflicted bullet wound.

Edward Anthony Zaworski ✠ Minneapolis; John A. Creighton Medical College, Omaha, 1911; served as vice president of the Northeast State Bank; medical examiner for the northeast section draft board; died November 25, aged 58, of coronary heart disease and hypertension.

KILLED IN ACTION

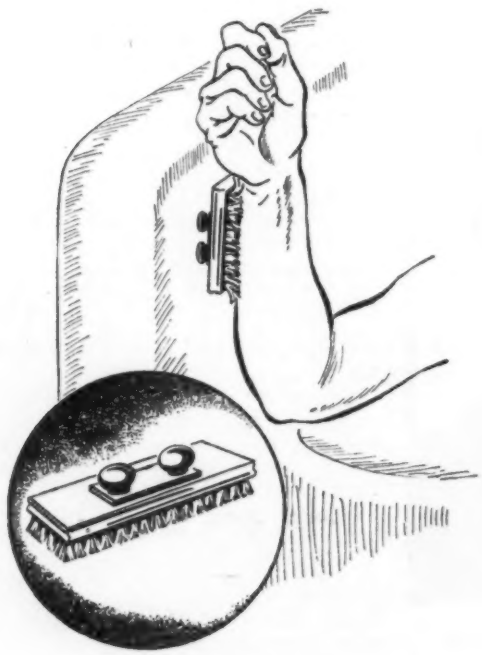
Charles Frederick Pecoraro, Somerville, Mass.; College of Physicians and Surgeons, Boston, 1937; captain, medical corps, Army of the United States and was assigned to the medical detachment, 532d Engineer Regiment; died in the southwest Pacific area September 25, aged 35, of wounds received in action.

Correspondence

DEVICE TO AID WASHING OF HAND BY PATIENT WITH AMPUTATED ARM

To the Editor.—Recently, without thinking, I told a one armed man who was in my office to wash his hand. He replied "How would I do it?" Obviously his plight is similar to the plight of many others and there probably will be many more when the casualties of the war come back. I am sending you a brush which I have prepared for the use of this patient. I have never seen or heard of any similar device nor have my friends who have seen it.

I would appreciate your publishing a picture of this simple, inexpensive and, above all, very efficient device, which the patient can carry with him and use at any time or place. The little rubber vacuum cups are still available in Indianapolis in limited quantities and if the brush would meet any great demand it probably could be manufactured economically by a large manufacturer of brushes.



Brush fitted with vacuum cups.

The idea is simply to attach two rubber vacuum cups to any brush. As far as I know, this particular use of the vacuum cup is new and I hope the idea will be of value to the unfortunate cripples who need it.

JOHN R. BRAYTON, M.D., Indianapolis.

LEPROSY

To the Editor:—Careful reading of a recent article by Frazier (Leprosy, Epidemiology and Natural History, THE JOURNAL, Oct. 23, 1943, p. 466) leaves me a bit bewildered. Why was it written? For the worker in leprosy who is familiar with the literature it contains nothing new, although some points are controversial, such as his statements regarding transmission. If it is for the general practitioner or dermatologist who may see an occasional case of leprosy, it is dangerous. Here are my reasons:

The section on natural history is true for the most part but ignores the accepted classification which is the basis for diagnosis, study and prognosis (The Cairo Congress, Report of the Subcommittee on Classification, *Internat. J. Lep.* **6**:389 [July-Sept.] 1938). One might think from Frazier's discussion that lesions may shift from tuberculoid to lepromatous and back to simple neural. This simply does not happen or, if it does, it is so rare that it has not to my knowledge been reported.

Regarding examination for Mycobacterium leprae, he states "Fixed tissue preparations of skin and lymph node are best for this purpose." Fixed skin preparations are of value only when bacilli are extremely scanty. Lymph node preparations are of much less value because of the difficulty in identifying bacilli found there as M. leprae. But in all lepromatous cases, and probably in the majority of cases in which bacilli will be demonstrated, Wade's "scraped incision" method is quite satisfactory (Wade, H. W.: The Bacteriological Examination in Leprosy, *Lep. Rev.* **6**:54, 1925). Moreover, in simple leprids one does not expect to find bacilli except, perhaps, in the nerves.

Today millions of young Americans are going into regions where leprosy is endemic, and the experience of the Philippine campaigns of the Spanish-American War is likely to be repeated on a larger scale. All the members of our armed forces should realize that leprosy, which may be unrecognized but contagious, is abundantly present in Polynesia, China, the Philippines, the East Indies, Thailand, Burma, India, Arabia, central and northern Africa, and even to some extent in southern Europe. Medical officers should be familiar with early symptoms of the disease in order to protect their troops as much as possible; but the general practitioner who five or ten years from now will see the returned soldier who begins to show signs of leprosy should also be able to recognize and diagnose the condition. Teach the medical profession to suspect and to diagnose leprosy; further study and treatment, if any, may well be left to special workers in that field.

NORMAN R. SLOAN, M.D., Kalaupapa, Molokai, T. H.
Medical Director.

POSTURE DURING EXAMINATION OF HEART

To the Editor:—In the Nov. 13, 1943 issue of THE JOURNAL a clinical note appeared with reference to posture during examination of rapid heart by Dr. L. S. Luton of St. Louis. The author states that it was "something new to him" when he noticed that a tachycardia in a patient he had been examining had abruptly terminated on the patient bending forward.

In a paper on "Paroxysmal Auricular Flutter of 1:1 Ratio," page 955 of Vol. 8 of the Annals of Int. Med. 1935, I quoted a communication from the patient under study for this condition in which he stated that he was able "to ward off an attack of the extremely rapid type by bending forward when the heart seemed undecided whether to go back on its regular beating or to take up the very fast palpitating route." This patient used to have attacks of tachycardia of 240 rate which was considered to be auricular flutter of 1:1 ratio.

On many occasions I have observed that patients subject to such paroxysms knew how to terminate such attacks by "doubling up on themselves" or "squatting down."

HYMAN ARENBERG, M.D.,
U. S. Marine Hospital,
New York.

HYPOGLYCEMIC ACTION OF NICOTINIC ACID

To the Editor:—THE JOURNAL, Nov. 27, 1943 contains an abstract of an article by F. J. Neuwahl on the hypoglycemic action of nicotinic acid (*Lancet* **2**:348 [Sept. 18] 1943). The following quotation is taken from an abstract of my report made at the meeting of the American Physiological Society in the spring of 1935 at Detroit and published in September of the same year in the proceedings: "Nicotinic acid exerted a mild hypoglycemic action. . . . In all cases an increase of muscular sensitivity, decrease of body temperature and slowing of heart beat were noted. The hypoglycemic action of nicotinic acid was most pronounced in turtles."

EPHRAIM B. BOLDYREFF, M.D.,
Butterworth Hospital,
Grand Rapids, Mich.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, Jan. 15, page 188.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, Feb. 21-24. Sec., Dr. B. F. Austin, 519 Dexter Ave., Montgomery.

ARKANSAS: * March. Sec., Dr. D. L. Owens, Harrison.

COLORADO: * Denver, April 4-7. Sec., Dr. J. B. Davis, 831 Republic Bldg., Denver.

CONNECTICUT: * *Medical. Written.* Hartford, March 14-15. *Endorsement.* New Haven, March 28. Sec. to the Board, Dr. Creighton Barker, 258 Church St., New Haven. *Homeopathic.* Derby, March 13-14. Sec., Dr. J. H. Evans, 1488 Chapel St., New Haven.

FLORIDA: * Jacksonville, June 26-27. Sec., Dr. W. M. Rowlett, Box 786, Tampa.

INDIANA: Indianapolis, May 2-4. Sec., Board of Medical Registration and Examination, Dr. W. C. Moore, 301 State House, Indianapolis.

KANSAS: Kansas City, Feb. 2-3. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. Seventh St., Kansas City.

MAINE: Portland, March 14-15. Sec., Board of Registration of Medicine, Dr. A. P. Leighton, 192 State St., Portland.

MASSACHUSETTS: Boston, March 14-17. Sec., Board of Registration in Medicine, Dr. H. Q. Gallupe, 413-F State House, Boston.

MISSOURI: *Reciprocity.* Jefferson City, Jan. 24. Sec., State Board of Health, Dr. James Stewart, State Capitol Bldg., Jefferson City.

MONTANA: Helena, April 3-5. Sec., Dr. O. G. Klein, First National Bank Bldg., Helena.

NEVADA: *Endorsement.* Carson City, Feb. 7. Sec., Dr. G. H. Ross, 215 N. Carson St., Carson City.

NEW HAMPSHIRE: Concord, March 9-10. Sec., Board of Registration in Medicine, Dr. D. G. Smith, State House, Concord.

NEW JERSEY: Feb. 15-16. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: * Santa Fe, April 10-11. Sec., Dr. LeGrand Ward, 141 Palace Ave., Santa Fe.

NEW YORK: Albany, New York, Buffalo and Syracuse, Jan. 24-27. Sec., Dr. R. R. Hannon, Education Bldg., Albany.

OHIO: *Endorsement.* Columbus, Feb. 7. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OREGON: * Portland, Jan. 26-29. Exec. Sec., Miss L. M. Conlee, 608 Failing Bldg., Portland.

RHODE ISLAND: * Providence, April 6-7. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

WYOMING: Cheyenne, Feb. 7-8. Sec., Dr. M. C. Keith, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

COLORADO: Denver, March 8-9. Sec., Dr. E. B. Starks, 1459 Ogden St., Denver.

CONNECTICUT: Feb. 12. Address State Board of Healing Arts, 250 Church St., New Haven.

DISTRICT OF COLUMBIA: Washington, April 17-18. Sec., Commission on Licensure, Dr. G. C. Ruhland, 6150 E. Municipal Bldg., Washington.

FLORIDA: Gainesville, June 8. Sec., Dr. J. F. Conn, John B. Stetson University, DeLand.

NEW MEXICO: Feb. 7. Sec., Miss Pia Joerger, State Capitol, Santa Fe.

OREGON: Portland, March 4. Sec., Board of Higher Education, Mr. C. D. Byrne, University of Oregon, Eugene.

RHODE ISLAND: Providence, Feb. 16. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: Vermillion, June 4-5. Sec., Dr. G. M. Evans, Yankton.

WISCONSIN: Madison, April 1. Sec., Prof. R. N. Bauer, 152 W. Wisconsin Ave., Milwaukee.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Optometry Practice Acts: Practice by Optometrist as Employee of Corporation "Unprofessional Conduct."—Lieberman, who was licensed to practice optometry in Connecticut, occupied rooms in a department store and examined persons seeking optometrical services, making no charge for his services if the person he examined and prescribed for purchased in the store the glasses prescribed but otherwise charging a fee that was turned over to the corporation conducting the store. He was paid a salary by the corporation and also received commissions on optical goods sold on his prescription. The corporation advertised extensively regarding the optometrical services available at its store, in which advertisements Liberman's name, if it appeared at all, appeared relatively inconspicuously. These advertisements reasonably left the impression in the minds of the readers that the corporation was offering to render optometrical services or, at least, that the corporation was responsible for the way and manner in which they were rendered. The Connecticut state board of examiners in optometry, after notice and hearing, revoked Lieberman's license to practice optometry on the ground that his practice under the circumstances stated constituted "unprofessional conduct," which under the Connecticut optometry practice act is sufficient grounds for the revocation of a license to practice optometry. Lieberman, in effect, appealed to the superior court, Hartford County, which restored his license, and the state board of examiners appealed to the Supreme Court of Errors of Connecticut.

This court, said the Supreme Court of Errors, construed the words "unprofessional conduct" as used in the optometry practice act in *Sage-Allen Co., Inc.* v. *Wheeler*, 119 Conn. 667, 179 A. 195, 98 A. L. R. 897, where we said:

> The words must have been used in the light of the fundamental purpose of the statutes to regulate the profession in the public interest and they can only be construed as intending to include conduct within their fair purport which either shows that the person guilty of it is intellectually or morally incompetent to practice the profession or has committed an act or acts of a nature likely to jeopardize the interest of the public.

The question presented by this case is whether on the facts Lieberman could reasonably be held to be guilty of conduct "of a nature likely to jeopardize the interest of the public." In determining this question the court considered the various optometry practice acts that have been enacted in Connecticut and concluded that there has been in those acts a growing recognition of the importance of regulating optometry and a recognition that a calling that was originally regarded as a trade has increasingly taken on the aspects of a learned profession. No doubt, said the court, this recognition is due to a greater realization by the legislature and the public of the fact we stated in the Sage-Allen case, supra; as follows:

> It is a matter of common knowledge that where a person suffers from defective vision the use of eyeglasses not correctly adapted to remedy the defect may seriously aggravate it and, because of the resultant eye strain, may bring about nervous and even physical disorders, with accompanying discomfort and loss of efficiency.

To this statement, continued the court, we add that a properly qualified optometrist should be able often to discover disease conditions of the eye which require treatment by an oculist and should, when they are discovered, refer his patient to a physician qualified to deal with them.

Lieberman apparently contended that his practice under his arrangement with the department store did not constitute unprofessional conduct because such an arrangement was permitted by the optometry practice act. The optometry practice act in effect when the Sage-Allen case, supra, was decided, said the court, provided, so far as is here pertinent, that "Nothing herein contained shall prohibit the operation in a department store of an optical department under the supervision of a duly licensed optometrist." By an amendment enacted in 1939 this

sentence was eliminated and the following was substituted: "No person except a licensed optometrist shall operate an optometrical office. Nothing herein contained shall be construed as prohibiting the conducting of clinics or visual surveys when they are conducted without profit." It is not easy to determine the purpose designed to be accomplished by this 1939 amendment, but we need not consider that question in its broad aspects. As was said in the Sage-Allen case, supra, the sentence in the law that was in effect before the 1939 amendment made it possible for a department store to conduct an optical department and employ a licensed optometrist in connection with it. It did not, in its terms or by necessary implication, authorize a department store to establish in connection with its business an office designed solely to render optometrical service and held out to the public as a place to which they might resort for such service, regardless of the relationship between a licensed optometrist in charge of such an office and the management of the store. As we said in that case, there is a distinction as regards the attention which the public is entitled to expect between a situation where an optical department in a store is in charge of a licensed optometrist and one where it is in charge of a layman, as in the former a customer visiting the department expects to receive the advice and assistance of a trained optometrist, assistance which he does not expect in the latter case. So there is a distinction as regards the rightful expectations of the public between a situation where an optometrist is merely in charge of an optical department and one where, in connection with the business of the store, a department store maintains a separate office in which an optometrist renders and is held out to the public as rendering the usual services of a licensed optometrist. Certainly the amendment of 1939 cannot be held to broaden the rights of those conducting stores where optical goods are sold so as to authorize them under any and all circumstances to have in connection with them an office where optometrical services are rendered.

While it may be true, continued the court, that the standards of professional conduct which should govern the practice of optometry are not in all respects the same as those which govern the practice of a physician, still in view of the recognized character that optometry has today there are certain fundamental requirements common to both the practice of optometry and the practice of medicine. One of these is that the patient who resorts to an optometrist for advice and help is entitled to the same undivided loyalty that he should receive from a physician. As was said in *Rowe* v. *Burt's Inc.*, Ohio App., 31 N. E. (2d) 725:

> Professionally, an optometrist should have no interest in any way in who fills his prescriptions. It is manifestly apparent that the situation here prevailing cannot permit the freedom in the optometrists which should exist in purely professional men.

That reasoning, we take it, was the basis of the decision of the Supreme Judicial Court of Massachusetts in *McMurdo* v. *Getter*, 298 Mass. 363, 10 N. E. (2d) 139, where it was held that a firm which availed itself of the services of a licensed optometrist was to be regarded as practicing optometry, although the test usually employed in determining whether an agency exists was not met. The court there said that employees of corporations, "though professionally trained and duly licensed to practice, owe their primary allegiance and obedience to their employer rather than to the clients or patients of their employer," and the principle which forbids a licensed member of a profession to practice among the public as the employee of an unlicensed person or corporation "recognizes the necessity of immediate and unbroken relationship between a professional man and those who engage his services." While, continued the court, under the facts in this case it might not be concluded reasonably that Lieberman was the agent or employee of the corporation, the vice of the situation lies in the particular relationship existing between Lieberman and the corporation and certain circumstances resulting from the arrangements between them. The fact that a considerable part of the compensation received by Lieberman came from commissions received from the corporation based on the sale of glasses prescribed by him, if such a practice were held generally permissible, would make it likely, at least in some instances, that the welfare of the patient would not be the sole criterion applied by the optometrist in rendering services to him. Also, because the profit to the store from the arrangement would come entirely from its sale of optical goods, an optometrist under such an arrangement as the one before us, in order to preserve his position with the corporation, might well be tempted to prescribe glasses or more expensive glasses when this would not serve true interests of the patient. The situation is one where the complete loyalty of an optometrist to his patient is put into serious jeopardy.

The state board of examiners in optometry concluded that the arrangement between Lieberman and the corporation amounted to a splitting of fees, forbidden by one of its regulations. Splitting of fees, said the court, as defined in the statutes of several states occurs where a member of a profession divides the compensation he receives from a patient with another member of the same profession or any person who has sent the patient to him or has called him into consultation. It may be that Lieberman could not be charged with a splitting of fees in the usual understanding of the offense. However that may be, where an optometrist working under such an arrangement as was Lieberman is not compensated for his services by a patient who buys glasses in the store, but only by the salary and commissions paid to him by the corporation with which he is connected, and where, if the patient does not buy glasses in the store, the compensation the optometrist receives is turned over to the corporation, the practice might well impair the personal responsibility of the optometrist to his patients, which is one of the safeguards of the proper rendition of services by a member of a profession.

The court then considered the advertising of optometrical services by the corporation. The advertisements, the court held, could reasonably be regarded as creating in the public mind the impression that it was the corporation which was offering to render optometrical services, or at least it was the corporation which was responsible for the way and manner in which they were rendered. An optometrist, said the court, is not forbidden to advertise; a physician may do so provided his advertisement is not "deceptive, misleading, extravagant, improbable or untrue." General Statutes, Sup. 1941, sec. 475f. Certainly an optometrist can be held to no higher standard of conduct. But to become a party to a type of advertising such as here involved may well be regarded as "unprofessional conduct" in that it leads the public into an erroneous conception of the respective responsibilities of the corporation and the plaintiff.

The court accordingly concluded that the state board of examiners in optometry from the evidence before it could reasonably find proved the charge that Lieberman was guilty of unprofessional conduct. Accordingly the court affirmed the action of the board in revoking Lieberman's license to practice optometry.—*Lieberman v. Connecticut State Board of Examiners in Optometry, 34 A. (2d) 213 (Conn., 1943.)*

Society Proceedings

COMING MEETINGS

Annual Congress on Industrial Health, Chicago, February 15-16. Dr. Carl M. Peterson, 535 N. Dearborn St., Chicago 10, Secretary.

Annual Congress on Medical Education and Licensure, Chicago, February 14-15. Dr. Victor Johnson, 535 N. Dearborn St., Chicago 10, Secretary.

American Academy of Orthopaedic Surgeons, Chicago, January 22-26. Dr. Myron O. Henry, 825 Nicollet Ave., Minneapolis, Secretary.

Clinical Orthopaedic Society, Chicago, January 22-26. Dr. Myron O. Henry, 825 Nicollet Ave., Minneapolis, Secretary.

Society of Surgeons of New Jersey, Atlantic City, January 29. Dr. Walter B. Mount, 21 Plymouth St., Montclair, N. J., Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

26:435-576 (Oct.) 1943

Mechanism of Auricular Paroxysmal Tachycardia. P. S. Barker, F. N. Wilson and F. D. Johnston.—p. 435.

Paroxysmal Supraventricular Tachycardia with A-V Block. G. M. Decherd Jr., G. R. Herrmann and E. H. Schwab.—p. 446.

Normal Human Ventricular Gradient: III. Relation Between Anatomic and Electrical Axes. R. Ashman, M. Gardberg and E. Byer.—p. 473.

Id.: IV. Relationship Between Magnitudes Aqrs and G and Deviations of RS-T Segment. R. Ashman.—p. 495.

Anomalous Origins of Posterior Intercostal Arteries from 915 Thoracic Aortas: Their Role in Fractures of Ribs. Myrtelle M. Canavan. —p. 511.

Atrial Septal Defect: Report of 2 Cases in Which There Was Recurrent Laryngeal Nerve Paralysis. H. Erlanger and S. A. Levine.—p. 520.

Basal Metabolic Rate in Essential Hypertension. G. E. Mountain, E. V. Allen and S. F. Haines.—p. 528.

Relative Clinical Potency of Digitalis U. S. P. X, Digitalis U. S. P. XI and Digilanid. L. B. Laplace.—p. 536.

American J. Digestive Diseases, Fort Wayne, Ind.

10:407-442 (Nov.) 1943

*Treatment of Amebic Dysentery. H. W. Soper.—p. 407.

Treatment of Peptic Ulcer. H. W. Soper.—p. 408.

*Peptic Ulcer at Fort Sill. R. C. Kirk.—p. 411.

Vitamins in Gastrointestinal Disease. L. Pelner.—p. 414.

Modern Explanation of Gastric Emptying Mechanism. J. P. Quigley. —p. 418.

Tuberculosis of Buccal Mucous Membrane. A. V. Weinberger.—p. 421.

For Better Nutrition. Alice R. Bernheim.—p. 425.

Psychologic Problems in Hypoglycemia. J. Wilder.—p. 428.

Effect of Liver Fraction of Duodenal Drainage on Certain Forms of Animal and Vegetable Life. M. E. Rehfuss and T. Williams. —p. 435.

Treatment of Amebic Dysentery.—Soper began intravenous administration of emetine in amebic dysentery twenty years ago. He saw many early cases, made daily proctosigmoidoscopies and demonstrated the acute early lesions, which disappeared after the third or fourth intravenous injection of emetine. Seven consecutive daily doses were given, followed by a seven day course of acetarsone, consisting of one 0.25 Gm. tablet three times daily before meals. No toxic symptoms were observed after the emetine injections. It was always given slowly, with the patient lying down. The author had but one recurrence in a series of 302 cases. In earlier years he had given emetine in advanced cases with deep ulcerations over a period of three or four weeks and had seen toxic symptoms. This convinced him that the failure of emetine to cure the chronic carrier was due to the induration surrounding the ulcer, which acted as a barrier. Intravenous administration of emetine is highly specific for patients not in the carrier stage. It reaches the entire circulatory area in a more concentrated form than when given subcutaneously. Hepatic and pulmonary abscesses occur often in late neglected cases. Abscesses in the brain, skin, lymph glands and bladder have been reported. The late ulcerative lesions in the colon are intractable to treatment. The ulcers are frequently connected by sinuses beneath a still intact mucous membrane. The author advises chiniofon as the drug of choice in the treatment of carriers. It is given in 0.25 Gm. tablets three to four times daily (adult dosage) for a period of eight to ten days.

Peptic Ulcer.—According to Kirk peptic ulcer assumes the leading role in digestive diseases in the military service. It leads all other gastrointestinal conditions as a cause for discharge from the army. The present study was made during the period from Oct. 1, 1942 to March 1, 1943. During this time 385 patients were admitted to the gastrointestinal section for study. Of these 385 men 50, or 12.9 per cent, were found to have peptic ulcer on clinical observation with x-ray examination. No correlation has been obtained between the gastric analysis and the severity of the ulcer complaints. Midepigastric pain occurring late at night and radiating into the back appears pathognomonic of duodenal ulcer. Intolerance to greasy foods on the part of these patients seems to be the greatest obstacle to military service. The emotional concept of the genesis of ulcer is not supported by the reported cases.

American Journal of Physiology, Baltimore

140:125-286 (Nov.) 1943. **Partial Index**

Mucus, Acid and Water Secretion in Stomach Following Injection of Pilocarpine. F. Hollander and J. Stein.—p. 136.

Comparison of Configuration in Electrocardiogram of Endocardial and Epicardial Extrasystoles. H. E. Hoff and L. H. Nahum.—p. 148.

Renal Reabsorptive Mechanism in Dog Common to Glycine and Creatine. R. F. Pitts.—p. 156.

Rapid Acclimatization to Work in Hot Climates. S. Robinson, E. S. Turrell, H. S. Belding and S. M. Horvath.—p. 168.

Consecutive Changes in Cutaneous Blood Flow, Temperature, Metabolism and Hematocrit Readings During Prolonged Anesthesia with Morphine and Barbital. H. D. Green, N. D. Nickerson, R. N. Lewis and B. L. Brofman.—p. 177.

Metabolism of Perfused Dog's Brain. C. A. Handley, H. M. Sweeney, Q. Scherman and R. Severance.—p. 190.

Effectiveness of Plasma, Gelatin and Saline Transfusions in Preventing Shock Induced by Leg Muscle Trauma and Tourniquets. W. Kleinberg, J. W. Remington, W. J. Eversole, R. R. Overman and W. W. Swingle.—p. 197.

Eccentricity of Standing and Its Cause. F. A. Hellebrandt, Bette G. Nelson and Eleanor M. Larsen.—p. 205

Constitution of Prothrombin. A. J. Quick.—p. 212.

Effect of Epinephrine on Frog Renal Hemodynamics in Intact Animal. R. P. Forster.—p. 221.

Blood Pressure Responses of Dogs to Vitamin A and Vitamin D_2. L. N. Katz, S. Rodbard and J. Meyer.—p. 226.

Effects of Anesthetic Dosage of Pentobarbital Sodium on Renal Function and Blood Pressure in Dogs. A. C. Corcoran and I. H. Page. —p. 234.

Effect of Vitamin A on Some Renal Functions of Dog. R. J. Bing. —p. 240.

Effect of Atropine and Quinidine Sulfate on Atrophy and Fibrillation in Denervated Skeletal Muscle. D. Y. Solandt, D. B. DeLury and J. Hunter.—p. 247.

Effect of Temperature of Blood on Heart Rate. E. K. Landsteiner and M. Hayes.—p. 256.

Effect of Administration of Estrogen on Mechanism of Ascorbic Acid Excretion in Dog. E. E. Selkurt, L. J. Talbot and C. R. Houck. —p. 260.

Annals of Allergy, Minneapolis

1:91-184 (Sept.-Oct.) 1943

Allergic Findings in Epileptic Patients and Ancestors. R. H. Spangler. —p. 91.

Temporomandibular Arthropathy in Serum Sickness. P. L. Turner and T. W. Clarke.—p. 115.

Brief Critical Review of Fundamental Knowledge Concerning the Allergic Diseases. A. F. Coca.—p. 120.

*Dermatitis Venenata: Report on Allergy Clinics in Fourth Service Command. S. W. French and L. J. Halpin.—p. 131.

Deallergization versus Hyposensitization. E. Urbach and P. M. Gottlieb.—p. 139.

Chemistry of Ragweed Pollen Extract: III. Relationship of Amount of Nitrogen Precipitated by Heat Coagulation with Various Protein Precipitants in Saline Ragweed Extract. E. A. Brown and N. Benotti.—p. 150.

Effect of Beta-Hypophamine and Suprarenal Cortex Extracts on Prevention of Histamine Shock in Guinea Pig: Preliminary Report. F. W. Wittich.—p. 154.

Dermatitis Venenata.—French and Halpin report results of treatment of 2,544 patients with poison ivy dermatitis observed during the summer of 1942 in the Fourth Service Command. A 5 per cent alcoholic extract of poison ivy was prepared, and thirty-two stations were furnished an adequate supply. Dermatitis venenata was most troublesome during June and July. At one training center it was the established diagnosis in 15 per cent of all dispensary patients seen during this two month period. Dilution of the concentrated extract just prior to each injection furnished a 1:10 solution. Daily hypodermic administration of gradually increasing amounts was the usual routine. In most instances a dosage of from 0.4 to 0.5 cc. of the 1:10 dilution was reached by the fourth day of therapy. Rarely was

it necessary to continue the administration longer than four or five days. The majority of the patients gave a history of having had previous dermatitis on exposure to poison ivy. Thus patch testing was not a prerequisite to the therapy. Patch testing was done in instances in which there was doubt as to the diagnosis. Of the total number of 2,544 patients 1,748 were given treatment at their dispensary. These patients remained on full duty. The 754 patients who were admitted to the hospital were unable to remain on a full duty status. The average hospital stay was 8.7 days. A comparison of therapeutic methods was made on 50 patients with lesions of near equal severity. Alternate cases were treated with alcoholic extract injections or local applications. In the group receiving alcoholic extract there was an average of 8.4 hospital days per patient. The group in which local applications of lotions and creams were used recorded an average stay of 11.3 days per patient. Of the 1,851 patients treated with alcoholic extract of poison ivy leaves 86.4 per cent received satisfactory benefit, 68 per cent being classified as good and 18.4 per cent as fair results. In the 179 patients (9.7 per cent) in whom the results were poor the lesions responded very slightly. No improvement was obtained in 33 patients (1.8 per cent) and an increase in severity was observed in 38 patients (2.1 per cent). With the exception of soreness and swelling at the site of some of the injections no reactions were observed.

Archives of Pathology, Chicago

36:437-538 (Nov.) 1943

Nerve Tumors of Female Genitals and Pelvis. R. Meyer.—p. 437.
Bronchiolar Lymphoid Hyperplasia as Cause of Emphysema: Report of Case. W. W. Brandes, R. A. Cook and M. P. Osborne.—p. 465.
Experimental Atherosclerosis in Chick. D. V. Dauber and L. N. Katz.—p. 473.
Studies of Normal and Abnormal Mitotic Activity: III. Rate and Periodicity of Mitotic Activity in Regenerating Epidermis of Healing Wounds in Rabbits. C. M. Blumenfeld.—p. 493.
Influence of Endocrine Glands on Growth and Aging of Skeleton. M. Silberberg and Ruth Silberberg.—p. 512.

Archives of Surgery, Chicago

47:419-516 (Nov.) 1943

Histomechanical Analysis of Nerve Reunion in Rat After Tubular Splicing. P. Weiss and A. C. Taylor.—p. 419.
Evaluation and Treatment of Factors Involved in Postlobectomy Collapse of the Lung. J. T. Chesterman.—p. 448.
Roentgenologic Demonstration of Spinal Metastases from Leiomyosarcoma of the Uterus. L. L. Robbins.—p. 463.
*Germicidal Activity of Alcohol, Hydrochloric Acid and Aluminum Potassium Sulfate: Their Effect on Cutaneous Flora. Esther Meyer and E. E. Vicher.—p. 468.
Primary Tuberculosis of Spleen: Report of Case. H. D. Coffee and S. Lipton.—p. 478.
Progress in Orthopedic Surgery for 1942: Review Prepared by an Editorial Board of American Academy of Orthopaedic Surgeons; VIII. Amputations, Apparatus and Technic. J. W. White.—p. 483.

Germicidal Activity of Alcohol, Hydrochloric Acid and Aluminum Potassium Sulfate.—Meyer and Vicher evaluated the effect of a 0.5 per cent solution of hydrochloric acid on the bacterial flora of the hands and arms and compared it with the effect of a solution containing 70 per cent of alcohol by volume and that of a 10 per cent solution of aluminum and potassium sulfate. Alcohol in a concentration of 70 per cent by volume was found to be an efficient germicidal agent for the bacterial flora of the skin. A 0.5 per cent solution of hydrochloric acid was found to be highly efficient also but not entirely comparable to the alcohol. Aluminum and potassium sulfate in 10 per cent aqueous solution evidently hardens the skin to such an extent that the organisms are imprisoned but not killed. They may be released after the softening of the skin which occurs when rubber gloves are worn and then removed in the subsequent scrubbing. The authors believe that either alcohol 70 per cent by volume or hydrochloric acid 0.5 per cent is sufficiently efficient to use in the presurgical preparation of the surgeon's hands and that a 0.5 per cent solution of hydrochloric acid could safely be used so as to conserve the supply of alcohol for more essential purposes. They also believe that a 0.5 per cent solution of hydrochloric acid has a true germicidal action on the bacterial flora of the skin.

Bulletin New York Academy of Medicine, New York

19:749-812 (Nov.) 1943

Nutrition Under Wartime Conditions: Harvey Lecture, May 20, 1943. V. P. Sydenstricker.—p. 749.
Andreas Vesalius, Professor at Medical School of Padua. A. Castiglioni.—p. 766.
Intermediary Metabolism in Diabetes Mellitus: Harvey Lecture, Jan. 15, 1942. W. C. Stadie.—p. 778.

Canadian Medical Association Journal, Montreal

49:251-348 (Oct.) 1943

*Use of Isinglass as Blood Substitute in Hemorrhage and Shock. N. B. Taylor and Margaret S. Moorhouse, with technical assistance of A. J. Stonyer.—p. 251.
*Clinical Use of Isinglass. H. E. Pugsley and R. F. Farquharson.—p. 262.
Pathogenic Correlations Between Periarteritis Nodosa, Renal Hypertension and Rheumatic Lesions. H. Selye and E. Irene Pentz.—p. 264.
Possible Transfer of Tropical Disease Due to War Conditions. T. W. M. Cameron.—p. 273.
Infectivity of Fluorescent Hairs in Scalp Ringworm. D. E. H. Cleveland.—p. 280.
Bright's Disease—A Clinical and Pathologic Study. L. J. Adams and S. R. Townsend.—p. 282.
Bronchopulmonary Suppurations Treated with Instilled Sulfathiazole Solution. V. Latraverse.—p. 290.
Riboflavin and Vitamin A in Relation to "Eye Strain." L. B. Pett.—p. 293.
Three Years of Neuropsychiatry in Canadian Army (Overseas). F. H. van Nostrand.—p. 295.
Otitic and Sinus Barotrauma. J. G. MacKenzie.—p. 301.
Bronchoscopy in Management of Massive Pulmonary Collapse. G. A. Henry.—p. 305.
Oropharyngeal Ulceration with Conjunctivitis and Skin Lesions. S. J. Shane.—p. 309.
Medical Branch of Navy in Fourth Year of War. A. McCallum.—p. 311.
Evacuation from Greece. W. M. Tait.—p. 314.

Isinglass as Blood Substitute in Hemorrhage and Shock.—Taylor and his associates think that in the event of heavy casualties the supply of blood serum may be insufficient and that a blood substitute should be kept in reserve. They reported experimental studies with isinglass two years ago and now describe additional investigations with this collagen, which they produce from swim bladders of fish. They demonstrated in experiments on dogs that transfusion either with whole blood or with a solution of isinglass was relatively ineffective in the treatment of shock caused by muscle damage. The difference between the results of transfusion in acute hemorrhage and in shock is offered as evidence against the theory of local fluid loss being a primary factor in the development of shock due to muscle injury. The authors describe tests for pyrogenic and antigenic activity of isinglass. The isinglass as now prepared has a relatively mild pyrogenic action. The temperature rise is well within the limits specified in the pyrogen test of the United States Department of Public Health. Isinglass is free from antigenic action. No abnormalities have been observed in the livers and kidneys of animals which have received repeated injections of isinglass intravenously over a period of weeks. The regeneration of plasma protein after depletion caused by acute hemorrhage does not appear to be interfered with by the transfusion of isinglass solution. There is some evidence that the injected protein is utilized for building body tissue and possibly in the manufacture of plasma protein.

Clinical Use of Isinglass.—Pugsley and Farquharson administered isinglass prepared by Taylor to 61 patients at the Toronto General Hospital. They used purified, powdered isinglass in concentration of 4 to 7 per cent dissolved in isotonic solution of sodium chloride. A total of 58 intravenous administrations was given to 51 patients chiefly for the purpose of detecting pyrogenic or other toxic effects; the remaining 10 patients were given isinglass solution for the treatment of shock or hemorrhage. A febrile reaction followed in 8 instances. In no case was the fever sustained longer than a few hours. A definite chill marked the onset in two febrile reactions. The remaining patients complained of a chilly sensation. Other associated symptoms in these patients were malaise, headache and nausea. In the remaining 50 infusions of isinglass solution no unfavorable symptoms followed. Ten patients suffering from the effects of shock or severe circulatory collapse were

treated by the intravenous administration of isinglass solution. All patients responded favorably; there was no evidence that the isinglass had given rise to toxic manifestations. The dose of isinglass infused varied from 200 cc. in the case of an infant to a total of 8,800 cc. during the course of three days to a patient suffering from severe burn shock.

Hawaii Medical Journal, Honolulu

2:293-340 (July-Aug.) 1943

Dengue Fever: I. J. R. Enright.—p. 293.
Id.: II. Review and Report of Three Cases. F. D. Nance.—p. 295.
Bubonic Plague on Island of Hawaii. C. L. Carter.—p. 296.
Glomus Tumor of Wrist: Clinicopathologic Study of Case. R. B. Cloward and I. L. Tilden.—p. 299.
Investigation of Tattooing in Honolulu. B. Witlin.—p. 302.

Journal of Clinical Endocrinology, Springfield, Ill.

3:529-572 (Oct.) 1943

Experience with a Quantitative Test for Normal or Decreased Amounts of Follicle Stimulating Hormone in Urine in Endocrinologic Diagnosis. H. F. Klinefelter Jr., F. Albright and Grace C. Griswold.—p. 529.
Use of Desiccated Blood Pellets in Biologic Assay of Blood Estrogens. B. J. Meyer and E. L. Sevringhaus.—p. 545.
*Two and Six Hour Pregnancy Test: Preliminary Report. H. S. Kupperman, R. B. Greenblatt and C. R. Noback.—p. 548.
*Sublingual Use of Testosterone in 7 Cases of Hypogonadism: Report of 3 Congenital Eunuchoids Occurring in One Family. L. M. Hurxthal.—p. 551.
Thecoma and Hyperthecosis of Ovary. L. Fraenke.—p. 557.

Two and Six Hour Pregnancy Tests.—Kupperman and his associates devised a two and a six hour pregnancy test which employs rats of almost any age or weight. The two hour test is based on the hyperemic effect of urinary gonadotropins on the ovary and ovarian capsule noted two hours after intraperitoneal injection of 1.5 cc. of urine in divided doses of 0.75 cc. each. The rats may be of any age (21 to 55 days) or weight (30 to 100 Gm.) provided vaginal introitus or corpus luteum formation has not occurred. If the six hour test is performed on immature rats the end reaction is the hyperemic effect of the urinary gonadotropin on the ovary and ovarian capsule. The diagnostic feature in the adult animal is the vascularizing effect of pregnancy urine on the corpora lutea of animals injected when in diestrus or metestrus. Of 33 specimens of urine from nonpregnant individuals there was no instance of a false positive reaction. Only 2 of 48 samples of pregnancy urine gave an indecisive reaction, but the urines from these patients yielded strongly positive reactions five days later. In performing the test 3 rats are sufficient, 2 for the two hour test and 1 for the six hour test. In instances of a negative test it is advisable to inject at least 2 more animals for confirmatory data.

Sublingual Use of Testosterone.—Hurxthal deals with the results of administration of testosterone in propylene glycol-alcohol sublingually in 6 cases of hypogonadism and 1 case of hypopituitarism. In the case of hypopituitarism, testosterone in propylene glycol-alcohol solution also was rubbed into the skin of one axilla and one side of the pubic area, demonstrating its local effect. In 4 cases testosterone was given for the first time. The other patients, in whom maintenance doses of testosterone by pellet implantation, injection or oral administration had been established, were given sublingual testosterone for a comparison of its maintaining effect. The preparation was administered in sublingual doses of 1 or 2 drops, which the patient was instructed to hold there for two to three minutes without swallowing. When a larger amount was administered the patient was instructed to take portions of it at convenient times throughout the day. Three of the cases of eunuchoidism reviewed here occurred in one family. The effectiveness of testosterone in propylene glycol-alcohol administered sublingually was demonstrated. It appears that in untreated eunuchoidism two or three times as much testosterone is needed sublingually as by pellet implantation. For maintenance purposes the sublingual administration of testosterone in propylene glycol-alcohol in eunuchoid patients compares favorably with intramuscular injection of testosterone propionate in oil in some cases but not in others.

Journal of Clinical Investigation, Boston

22:763-894 (Nov.) 1943

Studies on Plasma Proteins: V. Effect of Concentrated Solutions of Human and Bovine Serum Albumin on Blood Volume After Acute Blood Loss in Man. J. T. Heyl, J. G. Gibson 2d and C. A. Janeway, with technical assistance of Anne Shwachman and L. Wojcik.—p. 763.
*Variations of Plasma Vitamin A Level After Administration of Large Doses of Vitamin A in Liver Disease. H. Popper, F. Steigmann and S. Zevin.—p. 775.
*Calcium and Phosphorus Metabolism in Rheumatoid Arthritis and Degenerative Joint Disease. Marian W. Ropes, Elsie C. Rossmeisl and W. Bauer.—p. 785.
New Modified Protamine Zinc Insulin: Comparison with Histone Zinc Insulin, Clear and Standard Protamine Zinc Insulins. C. M. MacBryde and H. K. Roberts.—p. 791.
*Excretion of Gonadotropic Hormone by Prepuberal and Adolescent Girls. H. R. Catchpole and W. W. Greulich.—p. 799.
Lung Volume and Its Subdivisions in Upright and Recumbent Positions in Patients with Congestive Failure. Pulmonary Factors in Genesis of Orthopnea. M. D. Altschule, N. Zamcheck and A. Iglauer.—p. 805.
Clinical Studies on Incoordination of Circulation as Determined by Response to Arising. I. Starr.—p. 813.
Pancreatic Function and Disease in Early Life: I. Pancreatic Enzyme Activity and the Celiac Syndrome. S. Farber, H. Shwachman and Charlotte L. Maddock.—p. 827.
*Evidence That Body Irritations or Emotions Retard Gastric Evacuation, Not by Producing Pylorospasm but by Depressing Gastric Motility. J. P. Quigley, H. J. Bavor, M. R. Read and B. L. Brofman.—p. 839.
Traumatic Shock: VI. Effect of Hemorrhagic Shock on the Concentration of Renin and Hypertensinogen in Plasma in Unanesthetized Dogs. L. Dexter, H. A. Frank, Florence W. Haynes and M. D. Altschule.—p. 847.
Experimental Studies on Headache: Pharmacodynamics of Urine Excreted During Migraine Headache and Its Relation to 17-Ketosteroid Content. Clara Torda and H. G. Wolff.—p. 853.
Physiologic Intravascular Hemolysis of Exercise. Hemoglobinemia and Hemoglobinuria Following Cross Country Runs. D. R. Gilligan, M. D. Altschule and E. M. Katersky.—p. 859.
Analgetic Effects of Low Concentrations of Nitrous Oxide Compared in Man with Morphine Sulfate. W. P. Chapman, Julia G. Arrowwood and H. K. Beecher.—p. 871.
Relation of Gastric Function to Nausea in Man. S. Wolf.—p. 877.

Plasma Vitamin A Level After Administration of This Vitamin in Liver Disease.—Popper and his collaborators studied the influence of various liver diseases on vitamin A tolerance curves. Tolerance tests were made on 108 patients; 71 of these had disease of the liver or biliary tract; the remaining 37 were used for comparison. It was found that in patients with liver disease the tolerance curve is much flatter than in normal persons; it parallels the degree of liver damage. It is less flattened in arrested cirrhosis without jaundice and in biliary obstruction without hepatitis than in toxic hepatitis or cirrhosis with jaundice or in biliary obstruction with secondary hepatitis. With clinical improvement the tolerance curve and the low fasting plasma vitamin A level of patients with liver damage return toward normal. By comparison of the tolerance curves with a vitamin A content of liver biopsy specimens from the same patients, by camparison of the tolerance curves before and after saturating the liver with large amounts of vitamin A and by study of the tolerance curves in conditions known to be associated with disturbed intestinal absorption, evidence was obtained that the tolerance curves are not related to the liver saturation of vitamin A but rather to the efficiency of vitamin A absorption from the intestine. The disturbed intestinal absorption of vitamin A in liver disease is not primarily related to the degree of jaundice but rather to the degree of liver damage. The authors have been unable to correct the absorption damage by the administration of various bile acid preparations. Nevertheless the possibility cannot be excluded that in liver damage the absence of some particular bile acid from the intestine is the cause of the faulty absorption of vitamin A.

Calcium and Phosphorus Metabolism in Rheumatoid Arthritis.—The occurrence of decalcification in patients with rheumatoid arthritis and of marginal lipping or osteophyte formation in persons with degenerative joint disease suggested to Ropes and her collaborators that an alteration of calcium and phosphorus metabolism might be a primary feature of these diseases. The authors studied the calcium, phosphorus and nitrogen metabolism of 9 patients with rheumatoid arthritis and 3 patients with degenerative joint disease. The results revealed that the calcium and phosphorus metabolism was grossly normal

in patients with rheumatoid arthritis and degenerative joint disease. Detailed analysis indicated a slight tendency toward an increased rate of calcium metabolism and increased calcium excretion in patients with rheumatoid arthritis and a decreased calcium excretion in individuals with degenerative joint disease. The magnitude of the increased loss and retention, respectively, was small and may not be of importance. However, the variations from normal cannot be explained by any of the factors known to influence calcium metabolism and, although slight, may be sufficiently great to be of significance over a long period of time.

Excretion of Gonadotropic Hormone by Prepuberal and Adolescent Girls.—Catchpole and Greulich studied 4 girls at a correctional institution and 8 girls representing ambulatory cases from a tuberculosis sanatorium. Studies on 4 of the latter were repeated after a one year lapse of time. An attempt was made to obtain daily twenty-four hour urine specimens from all subjects for a period of one month at least. The subjects ranged in age from 4 years and 4 months to 14 years and 6 months. Only 1 had menstruated before the assays were made. Several of the subjects experienced first menses from one to several months after the determinations were performed. In the urine of the youngest girls either no hormone or only small quantities could be detected. In preadolescent girls hormone appeared more frequently and in larger amounts. With increasing quantities, fluctuations in day by day amounts became evident, but these did not appear to be systematic or cyclic. The pattern of gonadotropic hormone output appeared to be related more closely to developmental status than to chronologic age of the subjects. Hormonal activity in girls was on a generally lower level than that recorded for the fully developed adult menstrual cycle. It is suggested that this activity is to be correlated with a preovulatory phase of sexual development.

Retardation of Gastric Evacuation.—The impression is prevalent that pylorospasm results from emotions or through viscerovisceral or somatovisceral reflexes initiated by irritation of any portion of the body. It is also believed that the delay in gastric evacuation which results from such irritation is largely or entirely due to pylorospasm. Quigley and his collaborators show that much of the evidence on which these concepts rest may be questioned. They have irritated various parts of the body in unanesthetized dogs and have attempted to determine the effects not only on the pyloric sphincter but simultaneously on the motility of the pyloric antrum and duodenal bulb and on the gastric evacuation process. A series of 9 dogs were provided by the method of Meschan and Quigley with permanent cannulas giving access to the gastric and duodenal lumens. These animals were trained to lie in comfortable hammocks and to cooperate with the experimental procedures. The pyloric sphincter region (antrum, sphincter and bulb) tended to behave as a unit; in action the sphincter was similar, not contrary, to the antrum. Emotions and noxious stimuli did not produce pylorospasm but tended to inhibit the entire sphincter region; they retarded gastric evacuation. This retardation resulted from decreased antral peristalsis. The delayed evacuation was not due to pylorospasm; it developed in spite of the pyloric relaxation. The claim that pylorospasm is readily produced by emotional states or noxious bodily stimuli receives little support from this experimental study or from a critical consideration of the clinical evidence.

Journal-Lancet, Minneapolis

63:337-382 (Nov.) 1943

Introduction to Symposium on Vitamins. A. Keys.—p. 337.
Newer Members of Vitamin B Complex. C. A. Elvehjem.—p. 339.
Vitamin D. Genevieve Stearns.—p. 344.
Ascorbic Acid Intake and Appearance of Vitamin C Deficiency. F. W. Fox.—p. 349.
Medical Aspects of Vitamin K. H. Dam.—p. 353.
Vitamins and Physical Performance. A. F. Henschel.—p. 355.
Climate and Vitamin Requirements. H. L. Taylor.—p. 358.
Laboratory Methods of Evaluating Vitamin Nutritional Status. O. Mickelsen.—p. 360.
Clinical Diagnosis of Deficiences of Thiamine, Riboflavin and Niacin. L. E. Holt Jr. and V. A. Najjar.—p. 366.
Growth of Scientific Knowledge on Vitamin Needs of Man. A. J. Carlson.—p. 371.

Kansas Medical Society Journal, Topeka

44:325-360 (Oct.) 1943

Fundamentals of Psychiatry: XI. Mental Dynamisms. W. C. Menninger.—p. 325.
Bacillary Dysentery. J. B. Nanninga.—p. 331.
Migraine: Review of Current Opinion on Its Pathology and Treatment. F. A. Carmichael.—p. 333.

44:361-396 (Nov.) 1943

Fundamentals of Psychiatry: XII. Psychiatric Treatment. W. C. Menninger.—p. 361.
*Peptic Ulcer, an Endocrine Disease. J. A. Crabb.—p. 368.

Peptic Ulcer, an Endocrine Disease.—Crabb treated patients with peptic ulcer by administering 1 cc. of parathyroid extract every third day for three doses, then of 10 minims (0.6 cc.) every five to seven days for from six to twelve doses. He also used a palliative such as a bismuth and a paregoric mixture or an alkaline powder to be taken twenty or thirty minutes before the expected pain for the purpose of neutralizing the hydrochloric acid and to coat over and temporarily protect the ulcer from the eroding gastric juice. He thinks that it is not advisable to give alkalis immediately after meals at any time. They render pepsin inert and interfere or prevent the proper digestion of proteins. The diet was restricted to liquids or nourishing nonirritating soft foods for a few days and later was gradually increased in variety and quantity. Based on his experience in the use of parathyroid in the treatment of peptic ulcer in a large number of cases continuously during the last sixteen years, it is the author's opinion that peptic ulcer is an endocrine disease caused by a lack in the system of the parathyroid hormone. The treatment is therefore replacement therapy.

Oklahoma State Medical Assn. Jour., Oklahoma City

36:415-460 (Oct.) 1943

Radium Therapy in Treatment of Cancer of Skin. L. M. Piatt.—p. 415.
Role of Medical Short Wave Therapy in Otolaryngology. E. H. Coachman.—p. 417.
Comparative Symptoms in Peptic Ulcer and Cholecystitis in 200 Cases. A. B. Carney.—p. 420.
Sanitation in Wartime. H. J. Darcey.—p. 423.
Modern Aids in Treatment of Appendicitis. F. M. Lingenfelter, J. W. Cavanaugh and H. Richey.—p. 425.
How Firm the Foundation, How Frail the Superstructure. L. J. Moorman.—p. 431.

Southern Medical Journal, Birmingham, Ala.

36:665-708 (Oct.) 1943

Facial Fractures as Seen in Naval Service. T. H. Lipscomb.—p. 665.
Osteodystrophia Fibrosa Cystica and Juvenile Hyperthyroidism. J. E. Jacobs.—p. 668.
Primary Bronchial Actinomycosis. G. McHardy and D. C. Browne.—p. 674.
Congenital Sacrococcygeal Tumors: Case Report of a Teratoma. M. P. Neal and J. B. Carlisle.—p. 677.
Stilbestrol in Treatment of Extrauterine Placenta. A. P. Hudgins.—p. 678.
Carcinoma of Prostate. C. L. Prince and S. A. Vest.—p. 680.
Cancer of Left Colon and Rectum. R. L. Murdoch.—p. 685.
Gross Anatomy of Superior Hypogastric Plexus. R. H. Hoge and Louise Jones.—p. 691.
Nephrosis Associated with Early Active Syphilis. A. Klein and W. B. Porter.—p. 694.
Acute Visual Impairment During Tryparsamide Therapy. W. B. Potter.—p. 697.
Recognition and Radium Treatment of Nasopharyngeal Lymphoid Tissue. G. E. Fisher.—p. 702.

Southwestern Medicine, Phoenix, Ariz.

27:237-266 (Oct.) 1943

Medical and Surgical Aspects of Commonly Used Sulfonamides. A. P. Kimball.—p. 241.
Practical Surgery of Ovary. G. Heusinkveld.—p. 246.
Red Blood Cells of the Plasma Bank. M. Semoff.—p. 248.

Tennessee State Medical Assn. Journal, Nashville

36:373-412 (Oct.) 1943

Convulsions Under Ether Anesthesia. M. B. Davis.—p. 373.
Multiple Cost of Social Security. C. O. Pauley.—p. 382.

36:413-452 (Nov.) 1943

Local Treatment of Burns. R. B. Chrisman Jr.—p. 413.
Bacillary Dysentery: Résumé of Disease and Its Modern Treatment. E. L. Turner.—p. 424.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Brain, London

66:163-236 (Sept.) 1943

Arteriovenous Aneurysm of Midbrain and Retina, Facial Nevi and Mental Changes. R. Wyburn-Mason.—p. 163.
Vascular Factor in Intracranial Pressure and Maintenance of Cerebrospinal Fluid Circulation. J. E. A. O'Connell.—p. 204.
Marchi Reaction: Its Use on Frozen Sections and Its Time Limit. P. Glees.—p. 229.

British J. Children's Diseases, Dorking, England

40:63-92 (July-Sept.) 1943

*Use of Sulfonamides in Measles. R. Swyer.—p. 63.
Actinotherapy in Children. Eva Morton.—p. 68.

Use of Sulfonamides in Measles.—Swyer studied 1,193 cases of measles with a view of determining the effects of sulfonamides. The drugs were given to 324 patients for a short period immediately after admission; the remaining 869 patients did not receive sulfonamides unless complications arose. An additional 64 cases of bronchopneumonia and 29 of otitis media which occurred in an earlier epidemic were also examined as controls in the assessment of the value of this chemotherapy in treatment as opposed to prophylaxis of complications. The results were as follows: The complication rate was reduced from 13.7 to 11.4 per cent. The average hospitalization of uncomplicated cases was reduced from 12.2 to 10.8 days, but that of all complicated cases was unaltered. The mortality of bronchopneumonia was about halved. Results of treatment of otitis media were inconclusive, but the average length of hospitalization was reduced from thirty-nine days in controls to twenty-eight days in sulfonamide treated patients. Toxic manifestations were rare and mild. The author concludes that a short prophylactic course is not worth while. Having regard to the measure of therapeutic control possible for established complications (bronchopneumonia and otitis media) it is questionable whether routine sulfonamide prophylaxis with its potential risks is desirable.

British Medical Journal, London

2:535-566 (Oct. 30) 1943

Transplantation of Ureters into Large Bowel. G. G. Turner.—p. 535.
Ocular Manifestations of Neuroses Commonly Found Among Soldiers. I. C. Michaelson.—p. 538.
Human Fibrin as Dressing for Burns. R. G. MacFarlane.—p. 541.
Outbreak of Sandfly Fever in Two General Hospitals in Middle East. E. R. Cullinan and S. R. F. Whittaker.—p. 543.
Sandfly Fever and Rheumatic Series. R. L. Ferguson.—p. 545.

2:567-598 (Nov. 6) 1943

*Treatment of Gunshot Fractures of Limbs. S. S. Yudin.—p. 567.
Some Therapeutic Fallacies. J. W. Linnell and W. A. R. Thomson.—p. 572.
Observations on Acid Hematin Method for Estimation of Hemoglobin. C. A. Ashford.—p. 575.
Local Application of Sulfanilamide Powder in Radiotherapy. A. A. Charteris.—p. 577.
Renal Function in Myxedema. G. E. Beaumont and J. D. Robertson.—p. 578.

Treatment of Gunshot Fractures of Limbs.—Yudin presents experiences gained in eighteen months of war. The methods used are based on three therapeutic factors: wide surgical excision of the wound, adequate local and general use of sulfonamides and prolonged fixation in plaster. He describes the aims and technic of operations for gunshot fracture of the femur at various times after occurrence of the injury and with varied degrees of infection. When operation is undertaken within a short time the procedure is confined to the removal of foreign material and damaged or devitalized tissue. In such cases additional drainage is seldom required, but the wounds are not sutured. In treatment undertaken at a later period the method of choice is wide excision of infected and necrotic tissue and great care in mechanical cleansing, followed by free drainage. Adequate excision of muscle, so as to produce a funnel shaped aperture for drainage, is of great importance. The excision should not be excessively wide. The removal of muscles with arteries traversing them is dangerous, and in consequence the author has advocated the lateral approach through the vastus lateralis. In 350 cases of such fractures with gross sepsis in which he operated he has not had 1 single case of nonunion of the fracture. In addition, owing to the use of incision through the vastus lateralis and the technic of suturing the skin to the fascia lata he has not seen defective movement of the limb which can be attributed to postoperative defect in muscles. The first task in the treatment of a wounded man is to prevent the loss of life and limb by infection. The procedures described are often tedious and time consuming, and it has been said that such treatment cannot be used when the number of patients is large. However, they are irreplaceable by any other method of therapy, and by their means 95 per cent of patients with these injuries have their lives and limbs saved. Other methods and splinting, though useful for transport, are unsuitable for immobilization treatment over any length of time and cannot replace the use of plaster. Inadequate excision and temporary splintings could be justified only under conditions of great stress to enable the patient to be transported from the front line to the hospital.

Journal Obst. & Gynaec. of Brit. Empire, Manchester

50:317-392 (Oct.) 1943

Schistosomiasis (Bilharziasis) of the Female Genital Tract and Neighboring Tissues. B. Gilbert.—p. 317.
*Premature Rupture of Membranes: Effect on Labor At or Near Term; Review of 320 Cases and Results. D. S. Greig.—p. 337.
Vesicovaginal Fistula: Review of 65 Locally Inoperable Cases, Treated by Transplantation of Both Ureters into Pelvic Colon. H. E. Murray and H. Ahmed.—p. 347.
Breech Presentation in Elderly Primipara. D. C. Racker.—p. 352.
Pregnancy and Labor in Case of Intrapelvic Protrusion of Acetabulum. W. S. Campbell.—p. 359.
Case of Pseudohermaphroditism. E. Solomons.—p. 363.
Torsion of Pregnant Uterus. W. Jonas.—p. 366.
Chromophobe Adenomata of Hypophysis Cerebri. G. G. Lennon.—p. 369.

Premature Rupture of Membranes.—Greig reports 320 cases of premature rupture of membranes occurring in a consecutive series of 2,149 deliveries conducted in a wartime emergency maternity hospital in the years 1940 to 1942. Premature rupture of membranes is defined as having taken place when the rupture of the membranes precedes labor pains. In order to have two fairly comparable series the author eliminated 159 cases with highly abnormal conditions such as antepartum hemorrhage, surgical inductions and fetal deformities. There remained for comparison (1) a series of 310 cases of premature rupture of the membranes and (2) a series of 1,680 cases of orthodox labor. Only cases of over thirty-six weeks' gestation are considered. There is a definite increase in the incidence of premature rupture of membranes in cases of abnormal presentations such as occipitoposterior, breech and twin presentations. Parity and toxemia are not factors in producing premature rupture of membranes. On the average the length of labor is not increased. In 60 per cent of cases the premature rupture of membranes and the onset of labor are clinically simultaneous. Labor is appreciably shorter than normal in this class of case. When there is delay in the onset of labor after loss of liquor amnii, labor is appreciably longer and there is a noteworthy increase in the incidence of prolonged labor over thirty hours. Here probably is the justification for the old concept of "dry labor." Intervention can be kept at least to normal limits in cases of premature rupture of membranes. Good results can be obtained by careful management.

Journal of Physiology, Cambridge

102:127-258 (Sept. 30) 1943. **Partial Index**

Capillary Permeability in Traumatic Shock. D. Engel and E. Forrai.—p. 127.
Effect of Exercise on Chloride Excretion in Man During Water Diuresis and During Tea Diuresis. M. Grace Eggleton.—p. 140.
Muscular Activity and Choline Esterase. Phyllis G. Croft and D. Richter.—p. 155.
Rate of Regeneration of Peripheral Nerves in Man. H. J. Seddon, P. B. Medawar and H. Smith.—p. 191.
Influence of Posture on Pulmonary Blood Volume and Alveolar Gas Tensions. I. F. S. Mackay.—p. 228.

Prensa Médica Argentina, Buenos Aires

30:1915-1958 (Oct. 6) 1943. **Partial Index**

Gastric and Duodenal Reactions in Chronic Appendicitis. C. Bonarino Udaondo.—p. 1922.
*Infantile Paralysis: Study of a Recent Epidemic in Argentina. D. Vivoli and N. S. Loizaga.—p. 1940.

Infantile Paralysis.—An epidemic of an infectious disease presenting clinical features of poliomyelitis occurred in Argentina during the period 1942-1943. The incidence was higher in infancy and childhood and the clinical manifestations were essentially those of an acute infectious illness followed by partial or complete muscular paralysis affecting predominantly the limbs. Forms of spinal, bulbar and encephalitic poliomyelitis were clinically recognized. A number of patients died, and in the microscopic examination Vivoli and Loizaga found spherical or falciform corpuscles, sized 2.5 to 4.5 microns, located in the extracellular spaces and in the cytoplasm of macrophagic cells of the spinal cord, medulla, oblongata, intumescence, brain, liver, intestine and lymph nodes. Fragments of the spinal cord of 2 patients injected intraperitoneally or by mouth into rabbits and guinea pigs caused the death of these animals in a few days. Some of the animals developed paralyses of the limbs. Pathologic examination showed in the organs of the inoculated animals the presence of the same corpuscles found in the patients. By their morphologic characteristics these small corpuscles were considered to be protozoan organisms, most likely toxoplasma. Attempts to cultivate the micro-organisms failed. According to Vivoli and Loizaga it is impossible to ascertain whether the epidemic was one of poliomyelitis, although the clinical symptoms in all cases were indistinguishable from those of poliomyelitis observed in previous outbreaks in Argentina.

Revista Chilena de Pediatría, Santiago

14:549-628 (Aug.) 1943. **Partial Index**

*Meningitis Due to Pfeiffer Bacillus. J. Schwarzenberg L. and B. Montero Sierra.—p. 549.
Sulfathiazole in Therapy of Osteomyelitis: Case. W. Galasso V. and S. Finkelstein R.—p. 597.

Meningitis Due to Pfeiffer Bacillus.—Schwarzenberg and Montero Sierra report 6 cases of acute purulent meningitis due to Haemophilus influenzae. The meningeal symptoms appeared in the course of inflammation of the respiratory tract. The therapy consisted of administration of sulfonamide preparations in daily doses of 0.30 Gm. of the drug per kilogram of weight and of blood transfusion. It failed in all cases but 1. Haemophilus influenzae was identified in the cerebrospinal fluid obtained by ventricular puncture in the course of sulfonamide therapy and shortly before death. It was identified also in the cerebrospinal fluid obtained by lumbar puncture in some cases. Necropsy revealed a diffuse fibrinous purulent leptomeningitis, blockage of ventricles, encephalitis, cerebral abscesses and in some cases purulent pleurisy and septicemia.

Münchener medizinische Wochenschrift, Munich

89:637-658 (July 17) 1942. **Partial Index**

*Indications for Treatment of Suppurative Inflammation of Knee Joint in Wartime and for Amputation. H. Westhues and H. Rüd.—p. 637.
Method of Treatment of Syphilis by Dietetics and Cold Water. W. Richter.—p. 641.
*Changes in Stored Placental Blood. H. D. Ellenbeck and J. Carlblom.—p. 644.
Question of Myalgia in Cardiac Muscle. H. Ahringsmann.—p. 646.
*Insulin Therapy of Carcinoma. G. Schulte and H. Schütz.—p. 648.
Hepatic Disturbances and Rheumatism. E. L. Luft.—p. 651.
New Type of Silver Nitrate Points (Nitretten) C. Fervers.—p. 651.
Lichen Urticatus Produced by Noxious Insects. F. Hamburger.—p. 652.

Treatment of Suppurative Inflammation of Knee Joint.—Westhues and Rüd emphasize the importance of radical surgical intervention in cases of suppurative inflammation of knee joint. In wartime surgeons should make a rule that Läwen's method of frontal resection of the condyle or the even more radical method of resection of knee joint should be practiced. The latter method should be economically performed by chiseling off a narrow disk of bony cartilage from the condyle of the femur, including particularly the posterior parts of the condyle. Less radical intervention will not prevent stiffness of the knee but will be associated with much more danger for the leg and the life of the wounded. Puncture should be strictly limited to early cases of blood extravasation or effusion. Radical incisions at the four edges of the joint at the same time and continuous irrigation immediately after the incisions were made may be practiced only in cases of pseudophlegmon in the presence of collateral edema associated with empyema of the knee joint, but irrigation should be discontinued if total empyema does not disappear within a very short time. The method of opening up the knee joint will provide escape of pus but requires an acute angled position of the knee which may be impossible, owing to additional wounds of the leg. Conservatism should be the rule with regard to indications for amputation. The problem of saving the leg is first and foremost a problem of adequate postoperative immobilization which will provide control of suppuration and will facilitate change of dressing. A gravitation abscess may make treatment more difficult but need not be considered as indication for amputation, whereas an erysipelatous phlegmon should be. Blood transfusions, acid diet and exposure to air and sunlight may help to avoid amputation. Amputation may be indicated in cases in which the general condition has become worse in spite of local improvement and should be performed in the presence of local or general septic symptoms before the clinical picture of sepsis has been developed. Conservatism with regard to amputation does not entail an increase in the mortality rate.

Changes in Stored Placental Blood.—Ellenbeck and Carlblom state that stored blood of the umbilical cord undergoes certain changes and that its value compared to that of fresh blood is reduced. Its behavior has been the same as that of stored donor blood. For the first fourteen days changes in stored placental blood have been less definite than is reported in the literature with regard to stored donor blood. That applies to the disappearance of neutrophil leukocytes, to the behavior of the albumin-globulin quotient and to the increase of the potassium content of plasma.

Insulin Therapy of Carcinoma.—In the treatment of 25 patients with carcinoma, Schulte and Schütz employed Brüning's method, consisting of the administration of protamine zinc insulin combined with a low carbohydrate diet. Continuous blood sugar examinations were performed but proved of little value, since the blood sugar level did not reflect accurately the local or general effect of insulin on the organism afflicted with tumor. A high degree of tolerance to insulin similar to that in old persons with diabetes mellitus could not be demonstrated. Pronounced susceptibility to insulin of emaciated patients with carcinoma placed on a liquid-pulp diet corresponded to that of lean patients with diabetes mellitus on a low diet, as experienced by American authors. Euphoria has been the prominent characteristic of the effect of insulin therapy in carcinoma. Psychic ups and downs, however, have been observed, but these may be due to difference in the absorption rapidity of protamine zinc insulin. An objective direct effect on the tumor could not be demonstrated on roentgenologic examination, although an improvement of deglutition was manifest in cases of carcinoma of the esophagus which reacted to insulin. Complete failure of insulin was found in a case of carcinoma of the cardia in which no subjective or objective improvement could be demonstrated. The temporary analgesic effect of insulin resulted in almost complete disappearance of pain in a few cases and in a peculiar, somewhat dull pain in others; but pain became even worse when insulin therapy was discontinued. An analgesic effect was not manifest in some cases in which cancer was demonstrated on microscopic examination. Increase in appetite was noted in some patients with a resulting increase in weight of from 1 to 2 Kg., but considerable loss in weight was likewise associated with good appetite and large food intake. The peak of the insulin effect occurred within eight to ten days and was occasionally prolonged for two months. A true palliative effect cannot be attributed to insulin therapy of carcinoma. Roentgen therapy was practiced after insulin therapy, but tolerance to roentgen rays did not improve and a definite effect on the tumor could not be demonstrated. Insulin therapy may be only occasionally employed to alleviate pain and to improve a depressive mood in patients with carcinoma.

Book Notices

Traffic in Opium and Other Dangerous Drugs for the Year Ended December 31, 1942. Report by the Government of the United States of America. U. S. Treasury Department, Bureau of Narcotics. Cloth. Pp. 66, with 3 illustrations. Washington, D. C.: Government Printing Office, 1943.

This document, covering the calendar year 1942, constitutes the report of the government of the United States on the traffic in opium and other dangerous drugs for distribution through the Secretary of State to the nations signatory to the international drug conventions of 1912 and 1931. According to the report, reserve supplies of opium now stored in this country are ample to fill medical and scientific needs for several years. The number of nonmedical drug addicts in this country is estimated at no more than 1 in every 3,000 of the population, a reduction of at least 66 per cent in the past two decades. Vigilance must be exercised, however, to maintain this ratio of reduction, since war conditions frequently beget a relaxation of drug control, as has already occurred in Iran. In its analysis of the illicit traffic in narcotics, the Bureau of Narcotics records in this report that, along with Iran and Cuba, Mexico has now become the principal source of smuggled drugs seized in the illicit traffic throughout the United States. On the Mexican border, seizures of smoking opium were thirty times as large as in 1941, the major seizure during the year consisting of 27 pounds 3 ounces taken from a Mexican at Yuma, Ariz. Morphine, which formerly ranked next to heroin as a favorite drug of addiction, was extremely scarce. There were limited quantities of morphine sulfate available at extremely high prices, but morphine hydrochloride, with the exception of two seizures in Texas, was practically nonexistent on the illicit market. Heroin was obtainable in some sections of the country at very high prices but was often so highly adulterated as to be almost valueless so far as the maintenance of addiction was concerned. As a result of bootleg sources being greatly diminished there was an increased trend toward robberies and thefts from physicians' offices and drug stores. The adoption of measures to safeguard these supplies is urged by the Bureau of Narcotics. In states which permit the sale of paregoric without prescriptions, addicts purchase the drug in increasingly larger amounts and with accelerated frequency. By what might be designated a "cracking process," opium may be salvaged from paregoric, which the addict uses by hypodermic injection or orally. Compared with Canada, where the retail sale of paregoric is limited to prescriptions, the per capita consumption of this preparation in the United States is about fifteen times as high. The bureau recommends that the sale of paregoric be placed on a prescription basis. In the opinion of the bureau the most troublesome type of diversion of narcotic drugs from legitimate channels is that represented by the sale of morphine or of so-called morphine prescriptions by the relatively few unethical physicians who for financial gain descend to the level of and replace the drug pedler. Reference in detail is made to the case of one physician who issued 1,696 prescriptions between July 1, 1941 and Sept. 23, 1942 calling for a total of 37,602 ¼ grain morphine tablets. In addition, this physician purchased on official order forms 7,000 ¼ grain morphine tablets, making a total of 44,602 tablets dispensed or prescribed. This physician practiced in a small town with a population of 425. The total quantity of morphine seized during the year was 137 ounces, as compared with 96 ounces seized in 1941; of heroin, 879 ounces as compared with 922 ounces; of cocaine, only 4 ounces as compared with 15 ounces; of smoking opium, 1,851 ounces 161 grains (1941 figures not given); of marihuana, 11,830 ounces of bulk marihuana and 32,817 marihuana cigarets (comparable 1941 figures not given). The bureau takes issue with the contention recently advanced that marihuana does not give rise to antisocial behavior and cites authorities in support of its views. Three establishments were authorized to use raw opium during the year for manufacturing medicinal, powdered and granulated opium and for extracting alkaloids for sale or export as such. A fourth establishment was authorized to use raw opium in the extracting of alkaloids for use exclusively in the manufacture of its specialty. Four additional establishments were authorized to procure and use comparatively small quantities of raw opium for the purpose of manufacturing medicinal opium, tinctures and extracts. Two establishments were authorized to import coca leaves for the purpose of producing cocaine, one of which was authorized in addition to import a supply of coca leaves for the purpose of manufacturing therefrom a nonnarcotic flavoring extract. The report concludes with a number of tables reflecting the results of law enforcement activities engaged in during the year.

Textbook of Midwifery. By Wilfred Shaw, M.A., M.D., F.R.C.S., Physician-Accoucheur in Charge of Out-Patients, St. Bartholomew's Hospital, London. Fabrikoid. Price, 21s. Pp. 588, with 246 illustrations. London: J. & A. Churchill, Ltd., 1943.

This is an outgrowth of the author's lectures and instruction to medical students at St. Bartholomew's Hospital. The material is well organized and presented logically and clearly. It should serve as an admirable textbook for students and practitioners. Although there is a considerable difference in the practice of obstetrics in the United States and Great Britain, fundamental conditions remain the same. Most of the normal cases are under the care of midwives in England, and the majority of women are delivered by general practitioners in this country. For these reasons the author suggests a careful screening of patients so that parturition can be kept as natural as possible in normal women; but when complications arise they should be managed by competent specialists. This textbook, in common with most books in the specialty, retains many time honored practices that have been made obsolete by the advances in medicine and the development of safer and better procedures. The introduction of ergonovine has made obsolete the use of a hot intrauterine douche for the treatment of postpartum hemorrhage as a result of uterine atony. The premature induction of labor for cephalopelvic disproportion is still advocated by the author, but in the United States this procedure has been entirely replaced by trial labor and the low or cervical cesarean section in case of failure. In the treatment of placenta previa, uterine and vaginal tamponades are dangerous and have no place in modern obstetrics. The use of a bag and perhaps Braxton Hick's version is rapidly being replaced by safer procedures. On the other hand, the use of sulfonamides prophylactically in difficult deliveries represents a modern approach to the treatment of infections which may have some virtue. The author is to be congratulated on writing an excellent textbook during so critical a period in the life of his country.

An Introduction to Sociology and Social Problems: A Textbook for Nurses. By Deborah MacLurg Jensen, R.N., B.Sc., M.A., Instructor in Sociology and Social Problems at Schools of Nursing of St. Louis City Hospital and St. Luke's Hospital, St. Louis. Second edition. Cloth. Price, $3.25. Pp. 420, with 78 illustrations. St. Louis: C. V. Mosby Company, 1943.

This textbook for nurses, first published in 1939, follows the same general pattern as the first edition but has been completely rewritten. It is organized into eleven units. Unit I consists of one chapter concerned with the orientation of the nurse in a changing society. Unit II has three chapters dealing respectively with personality development, social groups and racial and nationality groups. In unit III are seven chapters dealing with social institutions, including the family, religious, economic and governmental institutions, professional nursing as a social institution and the interdependence of social institutions. Unit IV contains four chapters dealing with community organizations of various kinds and the place of the nurse in relation to them. Unit V consists of two chapters dealing with social change. A single chapter comprises unit VI, having to do with social problems in nursing service. Unit VII is composed of four chapters dealing with social problems arising from biologic sources, that is disease and physical deficiency; in this unit is a chapter on medical social work. Unit VIII deals in one chapter with mental diseases, mental hygiene and nursing. In unit IX are two chapters about social problems from economic sources. Unit X discusses social problems from cultural sources, devoting one chapter each to child welfare, the aged, crime and miscellaneous problems. Unit XI deals in three chap-

ters with social planning, including the Social Security Act, housing and health and security. There are two appendixes, one a list of agencies and associations and the other a glossary.

Each unit consists of one or more chapters, as indicated, followed by a list of questions and projects and references. The bibliography is extraordinarily comprehensive, including in some instances as much as three closely printed pages of references in 8 point type.

There are numerous pictograph statistical illustrations.

The tone of the book is factual, though there is evidence of a leaning toward legislation of the "Social Security" type of program. A brief and essentially factual analysis is given of the British Beveridge report. The chapter on health and security is based to a great extent on information from the National Health Survey of 1935-1936 and the National Health Conference in July 1938, though several statistical graphs from the American Medical Association Council on Medical Education and Hospitals are presented. The attitude of physicians in opposition to state medicine is presented. What might be interpreted as the principal conclusion of the author with respect to state medicine or compulsory health insurance is summed up in the following sentence from page 396: "Any plan or program must be worked out on the basis of our needs and in accordance with the American way of life." In general, such slanting as occurs in this book in favor of governmental and "socialized" medicine is very slight.

A Guide to Practical Nutrition: A Series of Articles on Nutrition, Sponsored by the Committee on Nutrition and Deficiency Diseases of The Philadelphia County Medical Society. Edited for the Committee by Michael G. Wohl, M.D., and John H. Willard, M.D. Introduction by Morris Fishbein, M.D., Editor, Journal of the American Medical Association, Chicago. Reprinted from Philadelphia Medicine, 1941-1942. Paper. Pp. 98. Philadelphia: Philadelphia County Medical Society, 1943.

This is a publication of the Committee on Nutrition and Deficiency Diseases of the Philadelphia County Medical Society. It contains chapters by various contributors, including an introduction by Morris Fishbein, and chapters on deficiency diseases, carbohydrates, fat metabolism, minerals in human nutrition, everyday diets, diet in pregnancy, nutrition in childhood, nutrition in the older individual, vitamin deficiencies, the vitamin B complex, riboflavin, nutritional aspects of dental disease, nutrition as a problem of war and public health and an appendix giving vitamin and mineral requirement charts showing functions, deficiency, symptoms, concentrated sources and food sources, a table of carbohydrate content of fruits and vegetables and a table of food composition, weights and measures, as well as an index and a bibliography. This is an excellent brief compendium for the use of physicians, trained nutritionists and advanced students. It is not particularly useful to the housewife, although it contains parts that should be readily understood by the lay reader. The table of food values is in percentages, showing protein, fat and carbohydrate only, which limits its convenience and its applicability.

Medical Malpractice. By Louis J. Regan, M.D., LL.B., Member State Bar of California. Cloth. Price, $5. Pp. 256. St. Louis: C. V. Mosby Company, 1943.

The emphasis that the author gives, in the concluding chapter of this book, to what he terms malpractice prophylaxis following an unusually informative and understandable presentation in earlier chapters of various types of malpractice claims, justifies the recommendation that every physician should read this book, particularly chapter 15 dealing with the prevention of malpractice suits. It is an old adage that an ounce of prevention is worth a pound of cure, yet few will disagree with the author that considerably more consideration must be given to the underlying factors that are basic in the production of claims against physicians based on alleged negligent treatment. It is essential, of course, that adequate defense be made to every unwarranted suit, for compromise in the absence of guilt simply breeds further difficulties. It is much more important, however, that physicians understand why claims for damages arise so frequently and after obtaining that knowledge do something about it. In the earlier chapters the author presents innumerable examples of malpractice claims that have been made against physicians, intelligently grouped and based on actual court cases to which citations are given. His method of presentation is to state succinctly a general rule, such as "There should be no publication of a medical case record and no showing of a picture, still or motion picture, from which the identity of a patient is determinable, without the knowledge and authorization of the patient," and then follow with brief abstracts of illustrative cases. This method of presentation makes for ready understanding on the part of the reader. In many instances the author points out how difficulty in a particular case could have been avoided and, despite the fact that hindsight involves less penetration than foresight, the author's comments will nevertheless suggest a practical application to many of the suggestions contained in his chapter on malpractice prophylaxis. This is a worthwhile book.

Law in Medical and Dental Practice. By Jack Neal Lott Jr., Dean of the University of Louisville School of Law, Louisville, Ky., and Robert Hanes Gray, Assistant Professor, University of Louisville School of Law. Fabrikoid. Price, $4.75. Pp. 499. Chicago: Foundation Press, Inc., 1942.

As a basis for the teaching of medical and dental jurisprudence, this book will fill a definite need. Its contents reflect the experience of the authors in teaching, by means of the lecture system, the subjects in medical and dental schools over a period of some eight years. That experience resulted in a conviction that the lecture system alone was inadequate for several reasons. First, the students, lacking a background in law, find it exceedingly difficult to absorb an understanding of the subject solely from lectures. Second, the authors are convinced that the average student tends to consider a lecture course as collateral. Third, difficulty was encountered in assigning outside reading because of the inadequacies of library material. The book adopts an arrangement that to a large extent is novel. It follows generally the case book method of presentation; that is, it reproduces actual court decisions to illustrate principles of medical and dental jurisprudence. In addition, the authors have assembled articles that have been published in law journals in which such principles have been discussed. Such articles are reproduced in the book following the court decision or decisions involving the principles enunciated in the articles. This method of arrangement permits the student to understand how a principle is applied by the court to a given set of facts and in addition to obtain a broad view of the subject by having the court's conclusions dissected and analyzed. While designed primarily for teaching, a reading of the book by the practicing physician or dentist will give him a more comprehensive understanding of many medicolegal problems he must face in daily practice. Among other subjects the book treats of some fourteen principles of law grouped under the general subject of malpractice, such as standards of care, disclosure of confidential information, consent to operations, duty to third persons and the doctrine of res ipsa loquitur. Another chapter deals with the subject of expert testimony. Another includes a number of cases and law journal discussions involving the broad subject of fees. The concluding chapters are devoted to autopsies and the regulation of the practice of medicine and dentistry by law. The book can be recommended to all teachers of medical and dental jurisprudence, to medical and dental students, and as a useful addition to the library of physicians and dentists.

Essentials of Syphilology. By Rudolph H. Kampmeier, A.B., M.D., Associate Professor of Medicine, Vanderbilt University School of Medicine, Nashville, Tennessee. With chapters by Alvin E. Keller, M.D., and J. Cyril Peterson, M.D. Fabrikoid. Price, $5. Pp. 518, with 88 illustrations. Philadelphia, Montreal & London: J. B. Lippincott Company, 1943.

This book is designed for practitioners of medicine. Disarmingly, the author meets "the almost certain criticism of brevity and superficiality." While lacking the encyclopedic detail of much longer works, the book is a distinct advance over most such "compend" attempts. The clinical manifestations of syphilis are well if briefly described, and the illustrations are good. The sections on treatment are relatively limited, and the discussion of intensive arsenotherapy of early syphilis is inadequate. There is lack of working detail as to treatment methods. The bibliography and index are incomplete, the latter (only ten pages long) especially inadequate. Nevertheless the book fulfils its stated purpose and can be recommended.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

SKIN RASH OF MOTHER AFTER CHILDBIRTH AND POSSIBLE AUTOSENSITIZATION TO MILK

To the Editor:—**A patient expects her third baby in about fifteen days. The first baby was born about seven years ago. At the time lactation was established she developed an annoying rash resembling that of poison ivy, which lasted for ten days. Her second child was born three years ago. On the third day after the baby arrived she had a similar rash. In this case I had avoided all forms of ergot and posterior pituitary injection as well as barbiturates. I would appreciate some information as to whether a mother can be sensitive or allergic to her own milk. If so, I will appreciate suggestions as to treatment.**

A. L. Isbell, M.D., Albertville, Ala.

ANSWER.—Sensitization of a woman to her own milk is considered a possibility by some allergists. In support of this view is the report of W. W. Duke (Allergy, Asthma, Hay Fever, Urticaria and Allied Manifestations of Reaction, St. Louis, C. V. Mosby Company, 1925, p. 139), who cites 3 cases in which, at the end of lactation, coincident with painful swelling of the breasts, there were symptoms of allergy. One of the patients had severe urticaria and angioneurotic edema and dizziness, which yielded to large doses of atropine and epinephrine. The other 2 had milder reactions, but 1 of them reacted with a wheal to the intracutaneous injection of her own milk, though a similar injection of other substances, including cow's milk, caused no reaction. Duke mentions these as possible but not proved instances of endogenous allergy. Erich Urbach (Endogenous Allergy, *Arch. Dermat. & Syph.* **45**:697 [April] 1942) supports this view and suggests, for the treatment of cases of this nature, the use of the urinary proteose of Oriel (Oriel, G. H.: Further Observations on the Biochemistry of Asthmatic Conditions, *Lancet* **2**:406 [Aug. 19] 1933). This difficult form of treatment would hardly apply to a sensitization so short in duration as that to human milk. In this connection, the test for the diagnosis of pregnancy originated by Falls and his associates is of interest as also showing a sensitization to breast secretion (Falls, F. H.; Freda, V. C., and Cohen, H. H.: A Skin Test for the Diagnosis of Pregnancy, *Am. J. Obst. & Gynec.* **41**:431 [March] 1941).

Mention of a dermatitis at the onset of lactation, suspected of being due to endogenous allergy, has not been found. It is much more likely, of course, that the dermatitis is caused in some more prosaic way. Special contacts not made at other times may affect the skin of the breasts, based on the idea that it needs special care at this time or, because of the lessened resistance at this time, ordinary contacts may arouse a sensitization suppressed at other times.

The possibility, already considered by the inquirer, that substances secreted in the milk may be responsible for the dermatitis is illustrated by the experiment of Donally, related by Louis Tuft (Clinical Allergy, Philadelphia, W. B. Saunders Company, 1937, p. 162). The blood serum of a woman sensitive to egg albumin was injected intracutaneously into the skin of a normal person. Then the whey of the milk of a normal woman who had eaten egg white was injected at the sensitized site and resulted in a sharp reaction. The amount of egg albumin in the whey was estimated as between 1 part to 1 million and 1 part to 1 billion. This is the passive transfer method of Prausnitz-Küstner. Patch tests may be of help in cases of allergy manifested by dermatitis. For urticaria, scratch or intradermal tests are more useful.

Another possibility is that resistance to infection has been lessened and ordinary skin organisms are able to take hold, though at other times they are held in abeyance. Cultures should be made.

In case the dermatitis is not confined to the breasts, one is not forced to assume a sensitization to the milk. There are profound changes taking place, shifting of endocrine values and absorption from the uterus, which may be capable of causing skin reactions. J. B. de Lee (The Principles and Practice of Obstetrics, Philadelphia and London, ed. 7, W. B. Saunders Company, 1938, p. 431) lists many skin diseases seen during the puerperium and states that "the skin seems particularly liable to disease" at this time.

An effort should be made to have this dermatitis diagnosed by a dermatologist. The treatment depends wholly on the nature and the momentary state of the dermatitis.

LOCKING OF PENIS DURING SEXUAL INTERCOURSE IN DOGS AND MAN

To the Editor:—**It is desired to know whether or not the locking mechanism which occurs in dogs during sexual intercourse ever occurs in human beings and, if so, the cause and the physiologic mechanism involved in the human being. I have heard of one apparently authentic case but have never found any reference to this occurrence in medical literature.**

M.D., Puerto Rico.

ANSWER.—In the dog there is no real ejaculation, but the semen slowly dribbles out drop by drop from the penis into the vagina. This process takes a long time, sometimes half an hour or longer, till all the semen has been deposited in the vagina. To prevent the female from running away, a series of spines come out of the penis when erect and insert themselves into the vagina, thus holding the female till she has received the necessary amount of semen. In the human being there is no such "locking mechanism." There is, however, a pathologic condition known as "penis captivus." In cases of this sort the female suffers from vaginismus, but the cramp instead of coning on at the beginning of coitus comes on after the penis has entered the vagina and holds it fast, and it may be necessary to give the female an anesthetic to relax the spasm and allow the penis to be withdrawn.

PROTEIN IN CEREBROSPINAL FLUID AND NEUROSYPHILIS

To the Editor:—**Kindly discuss spinal fluid changes in hypothyroidism, especially as they may affect the assay of spinal fluid findings in cases of latent syphilis and neurosyphilis. A patient manifested fatigability of the muscles of the head, neck and upper extremities, especially the muscles of mastication and deglutition. He did not have myasthenia gravis or syphilis. His basal metabolic rate averaged about — 40, the spinal fluid showed high protein and a left zone gold curve as in the paretic formula, and the Wassermann reaction was negative in all dilutions. After about two months on thyroid the basal metabolic rate began to be about — 20, when the patient showed clinical improvement and clinical evidence of overdosage. The spinal fluid became normal. Numerous patients with syphilis are seen whose spinal fluid Wassermann reaction is negative but protein is increased and middle zone gold curves are found. Perhaps some of these changes are not due to syphilis. The problem is confusing, and such clarification as you may afford will aid in assessing neurosyphilis with regard to military duty.**

Captain, M. C., A. U. S.

ANSWER.—The following quotation is from H. H. Merritt and Frank Fremont-Smith: The Cerebrospinal Fluid, Philadelphia, W. B. Saunders Company, 1938, p. 192: "The activity of the thyroid gland has a definite influence on the protein content of the cerebrospinal fluid. A low metabolic rate is usually accompanied by a high protein content in the fluid and a high metabolic rate by a low normal protein content.

"*Hyperthyroidism.*—The cerebrospinal fluid is usually normal in cases of exophthalmic goiter. In 15 cases which have been previously reported by Thompson and Alexander (1930) the protein content of the fluids varied between 12 and 37 mg. with an average of 24 mg. per 100 cc. After subtotal thyroidectomy there was an average increase of 13 mg. per 100 cc. in the fluids of these cases.

"*Myxedema.*—We have examined the cerebrospinal fluid from 28 patients with myxedema. The findings in 16 of these 28 cases were reported by Thompson, Thompson, Silveus and Dailey (1929). The pressures varied between 50 and 275 mm. Pressures in the neighborhood of 200 mm. were quite common. The cell count was usually normal, although it was occasionally increased up to 10 cells per cubic millimeter. The globulin tests were practically always positive, and the protein content was increased in 25 of the 28 patients. The highest value was 242 mg. Four cases had more than 100 mg. of protein per 100 cc. The sugar and chloride content of the fluids were normal. The colloidal gold reaction was usually negative or showed only a lilac change (2) in the midzone, although 4 of our cases showed a midzone curve.

"With treatment with thyroid extract there was a rapid decrease in the protein content of the cerebrospinal fluid usually to a normal level. The decrease in protein paralleled the increase in the basal metabolic rate. One of the cases reported by Thompson which had a protein content of 242 mg. before thyroid therapy had 36 mg. per 100 cc. after this therapy. In a recent case with a basal metabolic rate of — 33 per cent and a cerebrospinal fluid of 103 mg. the basal metabolic rate rose to + 17 per cent and the protein content of the fluid fell to 38 mg. per 100 cc. after a month of thyroid therapy.

"The cause of the high protein content in the cerebrospinal fluid in cases of myxedema is not clearly understood but is probably related to an altered permeability of the choroid plexus to protein. This hypothesis is supported by the fact that the protein content of the cistern and ventricular fluids in such cases is increased (Thompson et al., 1929).

"Differential Diagnosis.—The cerebrospinal fluid findings in cases of myxedema may be very similar to those of brain tumor, i. e., an increased pressure and a high protein content. The differential diagnosis is not always possible from the cerebrospinal fluid findings. The estimation of the basal metabolic rate is important in such cases."

The reference to Thompson et al. is Thompson, Phebe K.; Silveus, Esther, and Dailey, Mary E.: The Cerebrospinal Fluid in Myxedema, *Arch. Int. Med.* **44**:368 (Sept.) 1929.

An increase in protein in the spinal fluid and the resultant changes in colloidal curves, whether gold or other, are entirely nonspecific so far as a diagnosis of neurosyphilis is concerned. The only specific change produced by syphilis in the spinal fluid is a positive Wassermann or flocculation reaction. Increased protein content and colloidal changes may be due to a wide variety of other diseases.

UNDESCENDED TESTES

To the Editor:—**I am attempting to obtain the consensus regarding the value of chorionic gonadotropin injections in cryptorchism. I treated a patient aged 10 whose height, weight and general condition were normal except for failure of descent of the right testis. The right testis was not palpable; the left was in the scrotal sac and was normal in size. He received injections of 100 units of chorionic gonadotropin three times weekly for a total of eighty injections (8,000 units). About midway in this therapy the right testis became palpable in the lower part of the inguinal canal. Toward the end of the therapy the testis would almost reach the scrotal sac, but on palpation it would recede. There was some increase in size since it was first palpable, but it still was smaller than the left. Four years later (three years after conclusion of therapy) he was operated on for right cryptorchism. I saw him again recently, one year postoperatively, and his right testis is palpable at the top of the scrotal sac, recedes on palpation and is smaller than the left. I have advised further hypodermic medication. The surgeon ridicules the suggestion, as he also ridiculed the original therapy. Was the original therapy wrong? I understand this to be the proper preoperative procedure. Is it advisable to resume gonadotropin medication now in order to increase the size of the testis and help bring it down into proper position in the scrotal sac?**

M. C. Rosenkrantz, M.D., New York.

ANSWER.—It is generally agreed by those who have done considerable clinical investigation on the effect of endocrine therapy in producing descent of testes that this form of treatment in the human being will bring down not more than 25 per cent of the total number of undescended testes.

The original therapy was not wrong. It would appear that further endocrine therapy with chorionic gonadotropin 500 international units three times a week might be indicated for a short period of time—possibly eight weeks. If the testis does not descend by the time, another surgical attempt should be made to place it definitely in the scrotum. It is doubtful whether endocrine therapy will increase the size of the testes.

NERVE INJURY FROM BITE OF BEAR

To the Editor:—**A man was bitten by a bear in Yellowstone one year ago, the teeth penetrating the skin of the upper thumb, forefinger and left cutaneous fold. Healing occurred promptly without infection or medical attention. Two months later the patient had a mild febrile attack simulating a light influenza. Following this a general decline in health and a loss of weight were suffered. Tonsillectomy was performed six months later on the advice of the family physician. There followed a slow but moderate general improvement. Meanwhile and continuing to date a loss of strength has occurred in the left thumb and forefinger with pronounced atrophy of the muscles involved. Could you throw some light on this whole affair, especially now with reference to the loss of function of the two digits?**

David P. Ferris, M.D., St. Louis.

ANSWER.—This man probably has an atrophy of the first dorsal interosseus muscle on the left side due to an injury of its nerve supply, that is, muscular branch of the left ulnar nerve. Of course the extensors and flexors of the thumb and index fingers may also have been injured. The query does not mention the exact muscles involved. The atrophy and weakness of the thumb and index finger are due to the original bear bite.

PREGNANCY AND ABORTION

To the Editor:—**A woman had a miscarriage in August 1943 during the first part of the third month of her first pregnancy. Before her pregnancy an obstetrician said she was normal internally and it would be easy for her to become pregnant. What should be done to prevent future miscarriages? Are hormones required? The patient has had two normal periods since her miscarriage. How soon would it be safe to try for the second pregnancy?**

M.D., New Mexico.

ANSWER.—It is not unusual for the first pregnancy to end in abortion, even though the pelvic organs are entirely normal. In many instances the embryo or its covering are abnormal. As a rule, no special precautions are necessary during the next pregnancy. It may be well to have a basal metabolism determination and, if the rate is subnormal, thyroid can be administered during the first half of the gestation. Stimuli, such as coitus, douches and cathartics, should be avoided during the first three months of the gestation. Although many obstetricians suggest an interval of at least six months between pregnancies, there is no good proof that this is necessary.

Patients who have had several abortions and no viable offspring may be placed on a special regimen, which may include progesterone and vitamin E in the form of tocopherols.

THERAPY OF ALCOHOLISM

To the Editor:—**What dosage of apomorphine is necessary to produce nausea (or even vomiting) if this drug is placed in alcoholic drinks? I have a patient who is drinking too much at present and it was my idea to produce a nausea by having his wife put apomorphine in his drinks. This was tried on several occasions without success. In one evening a total of 3/10 grain (0.02 Gm.) was used without success. Is this plan advisable? Is it necessary to use larger doses than the usual 1/10 grain (0.0065 Gm.)? Will this drug work effectively by mouth?**

M.D., Indiana.

ANSWER.—The action of apomorphine by mouth is so variable and the beneficial results are so doubtful that this form of treatment is not advised. Even when administered by injection, apomorphine has too short a phase of nausea to form a strong and lasting association between the drinking of liquor and the ensuing illness. Also the drug may act as a powerful narcotic causing sleep, which often blots out the memory of discomfort; or it may cause euphoria, which is certainly not conducive to the desired conditioned reflex. These facts are pointed out by Voegtlin, Lamere and Broz (*Quart. J. Stud. Alc.* **1**:501 [Dec.] 1940), who call attention to the danger and futility of using apomorphine in this way. They recommend the injection of emetine followed by the exhibition of a variety of alcoholic drinks, the dosage of emetine and timing being adjusted so that nausea will follow the sight, smell and taste of liquor.

HAZARDS FROM SILICON AND FLUORIDES

To the Editor:—**In a steel factory the question has arisen as to certain occupational hazards. The compound $CaSi_2$ containing 3 per cent excess silicon metal is used as a reducing agent for electric furnace slags. The compound must be ground before using. The grinding operation raises a considerable amount of dust of the material. Can this have any injurious effect on the workers? The electric furnace process is accompanied by the production of clouds of the following materials: Fe_2O_3, SiF_4, F_2, CaC_2 and SO_2. The fluorine compounds can be detected by their characteristic irritating odor, but aside from causing temporary discomfort there is no other obvious effect on the men. Would constant inhalations of any of these materials cause any ill effects? Some of the men develop skin eruptions on the wrists and ankles. Could this be due to exposure to burnt lime (CaO)?**

I. T. Zeckwer, M.D., Philadelphia.

ANSWER.—No specific information is available on the physiologic action of $CaSi_2$, but in general silicides like carbides (except calcium carbide) are comparatively inert materials. Fluorine is a recognized pulmonary irritant. The gas silicon tetrafluoride, on contact with water, forms hydrofluosilicic acid, but this is not noticeably irritating unless heated. All of these products liberated as fumes in the process described should be regarded as possible acute irritants. Whether they cause progressive chronic disease of the skin or respiratory tract is unknown.

FETAL ASPHYXIA

To the Editor:—**I was called to attend a woman in pregnancy who, to the best calculation, was in the seventh month of gestation. She was in pain but not of the rhythmic type of labor. Examination disclosed the amniotic sac presenting intact with the head palpable. No dilated uterine cervix could be found. The membrane was ruptured and the labor terminated in a few minutes, with a little manipulation. An asphyxiated child was delivered with cessation of heart beat. On exposure to the air its fingers twitched a little, showing that death was recent. The cord was severed immediately but did not bleed. No time was lost in making a uterine examination, which disclosed a contracted cervix and retained placenta therein. This was removed by disintegration with some difficulty. This is what had happened: The fetus with the membrane had been expelled from the uterus and had remained in the vagina while the uterus had clamped down on this placenta, thereby cutting off the circulation of blood to the fetus, which caused the asphyxiation. I have carefully searched the literature and cannot find any parallel case. Will you please tell me if there is any such case on record?**

T. H. Standlee, M.D., Mirando City, Texas.

ANSWER.—In all likelihood the baby expired because of some interference with its circulation. Fetal asphyxia is often an accompaniment of the second stage of labor and it may prove fatal. The contraction of the cervix and the lower uterine segment could have occurred after the birth of the baby. Such contractions more often following the use of oxytocic drugs than in normal delivery. The clinical picture described is by no means rare, particularly in previable and premature deliveries.